

**Survivor: Online Courses**

**A Study of Voluntary Student Attrition in Asynchronous Undergraduate  
Online Courses using a Multi-Analytic Framework**

Patrick L. Devey

A Thesis

In

The Department

Of

Education

Presented in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy (Educational Technology) at

Concordia University

Montréal, Québec, Canada

January 2009

© Patrick L. Devey, 2009



Library and Archives  
Canada

Published Heritage  
Branch

395 Wellington Street  
Ottawa ON K1A 0N4  
Canada

Bibliothèque et  
Archives Canada

Direction du  
Patrimoine de l'édition

395, rue Wellington  
Ottawa ON K1A 0N4  
Canada

*Your file* *Votre référence*  
ISBN: 978-0-494-63452-3  
*Our file* *Notre référence*  
ISBN: 978-0-494-63452-3

#### NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

#### AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protègent cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

---

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

■ ■ ■  
**Canada**

# ABSTRACT

## *Survivor: Online Courses - A Study of Voluntary Student Attrition in Asynchronous Undergraduate Online Courses using a Multi-Analytic Framework*

Patrick L. Devey, Ph.D.  
Concordia University, 2009

Studies investigating retention specific to online courses are scarce, and those extant generally fail to yield practical solutions aimed at curtailing attrition rates, either because they attempt to isolate and profile the individual characteristics of successful students or use registration data to compare those who completed their studies to those who discontinued them. In so doing, the role of the institution in influencing its own retention rates has been marginalized since the information gathered hinges solely on student characteristics. Furthermore, the definition of attrition and the way it is measured has seldom been made clear, and rare are the studies that have gathered data directly from the students who dropped out, thereby limiting a researcher's ability to identify the factors that lead to the decision.

This dissertation proposes a framework to investigate voluntary student attrition in undergraduate asynchronous online courses through a longitudinal exploratory study. The study uses a multi-analytic methodology to identify the students who were enrolling in the online courses, find out why they enrolled in them, and isolate the factors that were at the root of their dropout decision. Survivor analysis is introduced as an additional tool which offers the ability to pinpoint the times during the semester when the students are at the highest risk of discontinuing.

A significant factor in decisions to discontinue was the opportunity cost of dropping the course. The larger the investment of their limited resources that had already been devoted to the course, the better the chance that the student would persist in it. The results of the survivor analysis helped confirm that students were at the highest risk of dropping out of a course when a significant effort was required in order to maintain a level of academic performance that would not jeopardize their grade-point average. Responses to open-ended questions exposed the major role played by institutions in a student's decision to abandon an online course. Subsequently, this dissertation suggests the adoption of the AIDES taxonomy for classifying the reasons that students discontinue their online courses in order that effective and proactive countermeasures can be designed and implemented.

## ACKNOWLEDGEMENTS

This dissertation marks the conclusion of an odyssey that could not have been completed without the unwavering support of several individuals. I would like to take a moment to acknowledge these key people.

First and foremost, I want to thank my parents, Lise and Dennis Devey. As high school teachers for over 35 years in Lachute, Québec, they have dedicated their lives to the education of others. Yet, their best lessons were saved for their four children. They have taught me that learning is a lifelong endeavour that is to be cherished and shared. They inspired me to better myself and provided the environment I needed to do just that. They were there (and continue to be) when I needed their advice, and they never pressured me to follow a certain path. This allowed me to discover my own way, and to learn about myself while doing so.

My younger brother Philip demonstrated to me first-hand the potential payoffs of dedication and hard work as he took to the mound for team Canada at the 2004 Summer Olympic Games (and shut-out the Australians 11-0). Although he no longer plays baseball, the photos and video clips of he and his wife Heather's sons Baylin and Jackson, and daughter Olivia (who was born the same week I defended), were a welcome and timely diversion during this ordeal.

My youngest brother Martin reminded me that sometimes I needed to clear my mind and fill-up the tank before getting back on the road. It became too easy to get immersed in this dissertation and I needed the occasional break to revitalize and reenergize myself, or else I would have certainly burnt out. For this I must also thank my friends who make up my extended family, also known as Club 7310.

My sister Emilie, the youngest of the Devey clan, embodies the primary reasons why I wanted to study online student retention. Although she has a full-time job and a college degree, my sister continues to pursue her education in order to better herself. But despite her volition and good intentions to forge ahead, her non-academic commitments complicate matters, thus making her a prime candidate for online learning opportunities. However, these same commitments have also caused difficulties in persisting in online courses and this research was an attempt to find ways to help her, and others in her situation.



I would like to express my gratitude to the Hamadé family who opened their doors and welcomed a total stranger into their lives. In doing so, they have demonstrated a level of generosity that never ceases to amaze me. Their journey to this country is truly inspirational and serves as a reminder of how blessed I am to be born and raised in Canada. They have adopted me much like they have adopted this country.

I would like to thank my committee members, Dr. Saul Carliner, Dr. Robert Bernard, Dr. Dennis Murphy, and Dr. Terry Anderson for their contributions to this dissertation. I would especially like to express my sincere appreciation to my supervisor, Dr. Steven Shaw, who did not hesitate to meet at random coffee shops in the late hours of the night in order to work on this project with me.

A special thanks also goes out to the eConcordia team for their help with the design and creation of the research Website and surveys. In particular, I would like to acknowledge the support of Mr. Andrew McAusland, who was at the origin of my foray into this field. I once complained about the experience I had with his online course, and he hired me on the spot to help him improve it. Little did I know that this job would eventually lead me to a doctorate in a field that I would have never thought of pursuing.

I would like to thank Concordia University's Mr. Terry Too for his help in retrieving the registration information I needed to conduct the analyses and for his genuine interest in the subject. Un gros merci also goes to Mr. Guy Gosselin and to Mr. Max Di Bitonto for their technical assistance with the videoconference for the defence. I would also like to acknowledge the contributions of Mr. Mark Cecere and Ms. Jennifer Sclater for their proofreading help with this manuscript.

Finally, I would like to convey my sincerest and deepest appreciation for my fiancée, and soon-to-be wife, Ms. Rania Hamadé. She demonstrated incredible patience, understanding, and has put up with quite a bit from me throughout this journey. I have learned more from her in the time we have been together than I can ever fit into this dissertation. But where this project has finally been completed, our journey together has just begun. It is one that I truly look forward to with much excitement and joy. Badi yeki tkouni shreekit hayete. Ana bhibbek, habibti.

My sincerest thanks, merci, and shukran to my family, friends, coworkers, teammates, students, and all others who have encouraged and supported me during these past few years.

## **DEDICATION**

My grandmother Olga was an avid writer and it was not uncommon for her to use up all of the white space on the inside and on the outside of the birthday cards she would send to me. In fact, she often tucked in an additional piece of paper when she ran out of room! She also took a keen interest in my studies and would often remind me that university schooling was a rare privilege that I must cherish and be proud of.

Les histoires d'enfance de ma grand-mère Margot m'ont toujours paru incroyablement intrigantes et fascinantes. Bien qu'elles aient reflété des moments difficiles de sa vie, elles finissaient toujours par me faire sourire. C'est précisément cet état d'esprit que je retiens d'elle et que j'essaie d'adopter du mieux que je peux dans ma vie. Par exemple, lorsque ce travail commençait à sérieusement me frustrer, j'essayais de me concentrer sur les choses positives dans ma vie, et cela m'aidait à remettre mes idées en place.

This dissertation is dedicated to my two grandmothers since it could not have been accomplished without the qualities and skills that they represent for me: a love for writing, perseverance during tough times, patience, attention to detail, and the fact that you must always end up smiling. Needless to say, I was smiling quite a bit when I handed this in! Despite the fact that one left at the beginning of this journey, and the other was lost at its conclusion, I find solace knowing that they truly would have relished in this accomplishment with me.

In Memory of – À la mémoire de:

**Olga Devey (née Willett)**

**1914-2005**

**Marguerite Alix (née Marcoux)**

**1923-2008**

# TABLE OF CONTENTS

List of Figures .....	xiii
List of Tables.....	xv
List of Equations .....	xvii
<b>CHAPTER ONE: INTRODUCTION .....</b>	<b>1</b>
Background .....	6
Statement of the Problem .....	9
Research Questions.....	14
Purpose of this Study .....	15
Definitions .....	17
<b>CHAPTER TWO: LITERATURE REVIEW .....</b>	<b>21</b>
The Genesis of Retention Research .....	21
Tinto's Interactionalist Model of Student Persistence .....	26
1. Student Entry Characteristics .....	29
2. Initial Goal and Institutional Commitment.....	32
3. Academic Integration .....	35
4. Social Integration.....	36
5. Subsequent Goal and Institutional Commitment.....	38
6. Dropout Decision.....	39
Criticisms of Tinto's Model .....	40
Bean's Organizational Model of Student Persistence .....	43
Additional Research .....	46
Summary of Early Retention Research .....	50
The Evolution of Retention Research .....	52
Non-Traditional Students .....	54
Distance Education .....	57
Retention in Distance Education .....	59
Retention in Online Courses .....	63
Variables Studied in Online Retention Research .....	65
Rovai's Model .....	75

Reasons for Dropping Out .....	76
Conclusion .....	81
Definition and Measurement of Retention .....	83
Evolving Demographics .....	85
Identifying the Online Learner .....	88
Comparing Retention Rates .....	89
Summary .....	91
<b>CHAPTER THREE: METHODOLOGY .....</b>	<b>95</b>
Research Questions .....	95
Research Setting .....	96
Participants .....	99
Procedure .....	100
Archival Data (Registration Information) .....	100
Web-Based Learning Questionnaire .....	105
Weekly (Longitudinal) Survey .....	107
Exit Survey .....	110
Researcher .....	113
Data Sources .....	113
Data Analysis .....	115
Who are the Online Students? .....	115
Why Students Enrol in and Drop Out of Online Courses? .....	116
When are the Students Dropping Out of Online Courses? .....	117
<b>CHAPTER FOUR: RESULTS .....</b>	<b>127</b>
Results of the Web-based Learning Questionnaire .....	127
Section I: Information about you .....	127
Section II: My Reasons for Choosing this Course .....	135
Section III: My Expectations .....	139
Dropout from WBLQ Respondents .....	142
Section I: Demographics .....	142
Section II: Why Students Enrolled in the Online Course .....	147
Section III: Expectations/Attitudes/Experiences of the Students .....	148

Results from the Registration Data .....	155
Analysis of the Demographic Variables.....	156
Gender .....	156
Age .....	158
Student Status .....	161
Program Preference.....	165
Program Type.....	166
Faculty.....	168
Language.....	170
University Experience .....	172
Performance .....	175
Registration Dropouts .....	178
Demographic Data .....	178
Gender .....	179
Age .....	180
Student Status .....	182
Faculties .....	183
Programme Preference.....	184
Program Type.....	187
Immigration Status and Source to University .....	188
Language.....	188
Performance .....	189
Credits and Programme Completed .....	190
Years in the Programme .....	192
Previous Dropout.....	193
Courses .....	194
Survival Analysis .....	195
Overall Results .....	195
Univariate Analyses.....	197
Variable: Gender .....	197
Variable: Student Status .....	199
Variable: Age Group.....	206

Variable: Faculty .....	208
Variable: Type of Programme .....	210
Variable: Programme Preference .....	212
Variable: Source .....	214
Variable: Immigration Status .....	216
Variable: Language .....	218
Variable: CRC .....	220
Variable: Cumulative GPA .....	222
Variable: Credits Completed .....	224
Variable: Percent of Programme Completed .....	226
Variable: Years in the Programme .....	228
Variable: Previous Dropouts .....	230
Overall Analysis by Course .....	233
Weekly Survey Results .....	236
Chemistry .....	238
Finance .....	239
Religion .....	241
Grade Sheet Results .....	242
Chemistry .....	243
Finance .....	243
Religion .....	244
Exit Survey .....	246
Background .....	246
Why they Enrolled .....	247
Reasons for Dropping Out: Survey Questions .....	248
Reasons for Dropping Out: Open-Ended Questions .....	253
<b>CHAPTER FIVE: DISCUSSION .....</b>	<b>256</b>
Who is Enrolling in Online Courses? .....	256
Age .....	257
Experience .....	257
Student Status .....	258

Work.....	260
Gender.....	261
Language .....	262
Skills.....	262
Academic Goal.....	263
Financial.....	264
Non-Traditional Students .....	266
Courses .....	269
Chemistry .....	269
Finance .....	270
Religion.....	271
Why did Students Enrol in Online Courses?.....	272
What were their Expectations and Attitudes? .....	278
About the Dropouts .....	281
Demographics .....	282
Gender.....	284
Employment .....	286
Student Status .....	287
Age.....	290
Faculty .....	291
Programme Preference .....	294
Program Type .....	295
Immigration Status and Source to University.....	297
Language .....	298
Performance .....	298
Previous Experience .....	305
Why are Students Dropping Out of Online Courses?.....	311
Exit Survey .....	312
Institutional Barriers.....	316
Dispositional Barriers .....	321
Situational Barriers .....	327
Epistemological Barriers.....	329

Other Barriers .....	333
Courses.....	337
Chemistry.....	340
Finance.....	342
Religion .....	344
Overall.....	347
Tinto: Reloaded .....	349
Academic Integration.....	351
Social Integration .....	356
The Dropout Decision .....	361
<b>CHAPTER SIX: CONCLUSION.....</b>	<b>364</b>
Enrolling in Online Courses.....	366
Meet the Dropout .....	368
Why Do Students Drop Out? .....	372
The Role of the Institution.....	374
Academic Integration.....	381
Future Research.....	384
Rethinking the Role of the Institution .....	386
Closing Remarks .....	390
References.....	395
Appendices .....	412
Appendix A: The Web-Based Learning Questionnaire .....	413
Appendix B: Weekly Survey .....	420
Appendix C: Invitation to Participate .....	421
Appendix D: Research Website .....	422
Appendix E: Exit Survey.....	423
Glossary .....	433



## LIST OF FIGURES

Figure 1. Tinto's Interactionalist Model of Student Persistence .....	28
Figure 2. Question from Weekly Survey .....	108
Figure 3. Data Collection Period.....	115
Figure 4. Financial Burden and Employment Status .....	133
Figure 5. Enrolment by Student Status and Years in Programme.....	134
Figure 6. Results from Section II of WBLQ .....	138
Figure 7. Results of Section III of WBLQ.....	142
Figure 8. Responses to "I am Considering Dropping Out" .....	153
Figure 9. Intent-Behaviour Attrition by Student Status and Gender .....	154
Figure 10. Age Group by Course.....	160
Figure 11. Enrolment by Years in Program and Student Status .....	162
Figure 12. Student Status by Program Type.....	163
Figure 13. Enrolment by Program Completion and Student Status.....	164
Figure 14. Proportion of Enrolments by Faculty .....	169
Figure 15. Performance and cGPA by Faculty .....	170
Figure 16. Language by Course .....	171
Figure 17. Performance by Language.....	171
Figure 18. Cumulative GPA and Performance by Year in the Programme .....	173
Figure 19. Cumulative GPA and Performance by % of the Programme Completed .....	175
Figure 20. Dropout by Gender and Student Status.....	179
Figure 21. Dropout by Age Group .....	181
Figure 22. Dropout by Age Group and Student Status.....	182
Figure 23. Dropout by Gender, Student Status, and Age Group.....	183
Figure 24. Dropout by Faculty.....	184
Figure 25. Dropout by Student Status and Programme Preference .....	185
Figure 26. Dropout by Program Type and Student Status .....	187
Figure 27. Dropout by cGPA.....	190
Figure 28. Dropout by Program Completion .....	192
Figure 29. Dropout and Years in the Programme .....	193
Figure 30. Dropout and Previous Dropout Behaviour.....	194

Figure 31. Overall Survival Function.....	196
Figure 32. Overall Hazard Function .....	197
Figure 33. Survivor and Hazard Functions for Gender .....	198
Figure 34. Survival and Hazard Functions for Student Status .....	200
Figure 35. Survival and Hazard Functions for Student Status and Gender .....	202
Figure 36. Hazard Function and Data table for Student Status by Course.....	204
Figure 37. Survival and Hazard Functions for Age Groups .....	207
Figure 38. Survival and Hazard Functions for Faculty .....	209
Figure 39. Survival and Hazard Functions for Type of Programme .....	211
Figure 40. Survival and Hazard Functions for Programme Preference .....	213
Figure 41. Survival and Hazard Functions for Source.....	216
Figure 42. Survival and Hazard Functions for Immigration Status .....	217
Figure 43. Survival and Hazard Functions for Language .....	219
Figure 44. Survival and Hazard Functions for CRC Scores .....	221
Figure 45. Survival and Hazard Functions for cGPA .....	223
Figure 46. Survival and Hazard Functions for Credits Completed.....	225
Figure 47. Survival and Hazard Functions for Percentage for Programme Completed .....	227
Figure 48. Survival and Hazard Functions for Years in the Programme .....	229
Figure 49. Survival and Hazard Functions for Previous Dropouts .....	231
Figure 50. Survival and Hazard Functions by Course .....	234
Figure 51. Participants in the Weekly Survey.....	237
Figure 52. Participants in Weekly Survey who Dropped Out .....	237
Figure 53. Results of the Weekly Survey for CHEM 208.....	239
Figure 54. Results of the Weekly Survey for FINA 200.....	241
Figure 55. Results of the Weekly Survey for RELI 216.....	242
Figure 56. Lack of Assessment Completion and Dropout .....	245
Figure 57. Reasons for Enrolling in the Online Course (Exit Survey) .....	248
Figure 58. Reasons for Dropping Out of Online Course (Exit Survey) .....	251
Figure 59. Satisfaction with Online Course .....	252
Figure 60. Estimated Grade in Online Course .....	253
Figure 61. The AIDES Taxonomy for Online Course Dropout.....	390

## LIST OF TABLES

Table 1. Demographic Information from WBLQ .....	128
Table 2. Previous Experience .....	129
Table 3. Computer Usage by Students Before Enrolling in Online Course.....	130
Table 4. Hours of Employment.....	130
Table 5. Educational Goal.....	131
Table 6. Level of Education of the Parents.....	132
Table 7. Financial Burden .....	132
Table 8. Financial Burden for Full-Time and Part-Time Students.....	133
Table 9. Employment Status for Full-Time and Part-Time Students .....	134
Table 10. Age Group of Full-Time and Part-Time Students.....	135
Table 11. Results of Section II of WBLQ .....	138
Table 12. Results of Section III of WBLQ .....	141
Table 13. Dropout by Demographic Variable .....	144
Table 14. Dropout by Demographic Variable (Cont'd).....	146
Table 15. Comparisons of Reasons for Enrolling in Online Course .....	148
Table 16. Comparison of Expectations, Attitudes, and Experience .....	152
Table 17. Demographic Information from Registration Data .....	155
Table 18. Gender Breakdown by Course.....	158
Table 19. Mean CRC Scores by Age Group.....	159
Table 20. Mean GPA and Cumulative GPA Scores by Age Group.....	159
Table 21. Proportion of Part-Time and Full-Time Students by Age Group.....	163
Table 22. Student Status by Course .....	164
Table 23. Gender and Student Status by Course .....	165
Table 24. Age of Students by Type of Programme.....	167
Table 25. Correlation Matrix for Prior and Current Academic Performance .....	177
Table 26. Comparison of Student Dropout and Persistence .....	186
Table 27. Life Table .....	196
Table 28. Summary of Survival Analysis for Gender .....	199
Table 29. Summary of Survival Analysis for Student Status.....	200
Table 30. Summary of Survival Analysis for Student Status and Gender .....	203

Table 31. Summary of Survival Analysis for Student Status by Course .....	204
Table 32. Summary of Survival Analysis for Age Groups.....	207
Table 33. Summary of Survival Analysis for Faculty .....	209
Table 34. Summary of Survival Analysis for Type of Programme .....	211
Table 35. Summary of Survival Analysis for Programme Preference .....	213
Table 36. Summary of Survival Analysis for Source .....	216
Table 37. Summary of Survival Analysis for Immigration Status.....	217
Table 38. Summary of Survival Analysis for Language .....	219
Table 39. Summary of Survival Analysis for CRC Scores.....	221
Table 40. Summary of Survival Analysis for cGPA.....	223
Table 41. Summary of Survival Analysis for Credits Completed .....	225
Table 42. Summary of Survival Analysis for Programme Completed.....	227
Table 43. Summary of Survival Analysis for Years in the Programme.....	229
Table 44. Summary of Survival Analysis for Previous Dropouts.....	231
Table 45. Life Table by Course .....	235
Table 46. Summary of Background Information from Exit Survey .....	247
Table 47. Reasons for Dropping Out of Online Course. ....	250
Table 48. Classification of Garland's Barriers to Distance Education.....	254
Table 49. Individual Reasons for Attrition (Exit Survey).....	255
Table 50. Retention Rate Comparisons.....	283

## LIST OF EQUATIONS

Equation 1. The Survival Probability (S) as a Function of Time (t) .....	122
Equation 2. The Product-Limit Estimator .....	122
Equation 3. Hazard Function .....	123

## **INTRODUCTION**

Educational researchers have been studying the dropout phenomenon for almost a century. However, there is currently “no formal economic, organizational, psychological, or sociological theory that accounts for student departure in commuter colleges and universities” (Braxton, Hirschy, & McClendon, 2004). There have been attempts to predict dropout behaviour using student demographics and regression models, but these studies were limited in success and practical application (Tinto, 1993). Others have tried to isolate the characteristics of “successful” online learners and have subsequently attempted to predict potential dropouts as those students who did not possess these “successful” traits (Lim, 2001; Osborn, 2001). Again, this technique failed to account for the majority of the explained variance (Smith, Murphy, & Mahoney, 2003), and it was found that persisters and dropouts shared many of the same characteristics and stresses (Morgan & Tam, 1999).

Retention is a complex and multi-dimensional issue (Berge & Huang, 2004). Every student’s situation is unique, every course is different, and each educational institution has its own environment, characteristics, and clientele. For example, consider the following brief description of three typical students who were registered in online courses during the fall 2007 semester at Concordia University in Montréal, Canada. Although their backgrounds may differ, they share a common goal in that they all wanted to succeed in the course in which they were enrolled.

Student 1: As a new, full-time undergraduate student at Concordia University, Martin must enrol in three core courses for his programme in the first semester. This means that he can take two additional elective courses to fulfill the maximum course load for a semester. Since most of the elective courses that interested him were filled to capacity by the time he was able to register, Martin decided to enrol in two online courses. This also meant that he would not have classes on Fridays, which will give him more time to enjoy his first semester in Montréal. He is not

intimated by online courses since he has successfully completed a few in the past. He is motivated, enthusiastic, and excited to undertake his first semester at Concordia University.

Student 2: Emilie is a stay-at-home mom who is looking to enrol in a few courses to hopefully complete the university degree she started a few years ago at Concordia. She has been out of school for almost a year now, and figured that taking online courses would be a way to slowly reintegrate herself as a student, without needing to leave the house. Since she had never completed an online course before, she decided to enrol in one course to see how things would go. The subject matter was quite interesting to her, and she had ample opportunity to watch the online videos and complete the readings, so she was confident that she would succeed in the course.

Student 3: Working full-time can make it difficult to find the time to complete additional courses. However, Philip has the support of his employer to enrol in some classes to advance his skills, which his company will even pay for. Although Philip had never taken an online course, he was confident that he had the time to devote to the course, especially since he did not have family commitments to worry about after the work day. He expected online courses to be slightly different from the classroom-based courses that he was used to, but he did not expect his prolonged hiatus from formal schooling to be an issue.

There is research to suggest that Martin is a likely candidate to drop out because of his lack of experience in a university setting (Dupin-Bryant, 2004). He may have taken online courses before, but as a freshman in a new city, he may be too distracted by the social scene to have the self-discipline needed to complete one online course, let alone two. On the other hand, there is research that argues that he would be the most likely to complete an online course because he has experience with online learning and as a result, has a better idea as to what to expect (Jun, 2005).

Others will isolate Emilie as the most likely candidate to withdraw from her course because of her family commitments (Rovai, 2003) and because of her lack of experience in online courses (Jun, 2005). She may think that she will have the necessary time to devote to the class, but she will find it too difficult to concentrate on it due to her other commitments, and subsequently will have to drop out. Conversely, it can be argued that Emilie has a better chance of completing an online course since research has shown that females are more successful in this type of independent learning environment (Woodley & Parlett, 1983; Packham, Jones, Miller, & Thomas, 2004).

Philip's full-time job could single him out as being the most likely candidate to drop out (Xenos, Pierrakeas, & Pintelas, 2002). In addition, since he is not financially responsible for the course, he may not be as motivated to complete it as he would have been had he paid the course fees himself (Simpson, 2003). This being said, the fact that he is an older student and that he has the support of his employer is oftentimes considered an advantage to persisting in an online environment (Rovai, 2003).

Predicting a student's fate in their online course based solely on their profile is unsatisfactory, especially when "virtually every attribute of personality has been cited as being related to the likelihood of departure" (Tinto, 1993). In other words, correctly predicting that Martin, Emilie, and Philip *all* dropped out of their respective online courses could not have been accomplished by reading their description.

Why has there been limited success in predicting student dropout? Munro (1981) suggested comparing the dropout phenomenon to an automobile accident: there are many different causes, but the end result is the same. The analogy is appropriate to the context of this research because it presents additional similarities with the phenomenon of student withdrawal:

1. To earn a driver's license, individuals must first demonstrate both their theoretical knowledge and practical skills. Similarly, to be admitted to university, students must



demonstrate their academic capabilities, usually with a high school (or CEGEP) diploma. In some cases they are asked to write an entrance exam. This is done in an attempt to admit students who are most likely to succeed in the programme, and thus not dropout.

2. Although automobile accidents cannot be predicted, there are certain environmental conditions that increase the chances of such an occurrence (e.g., rain, snow, wind, etc...). In a similar way, unforeseen life circumstances, such as health problems, financial difficulties, and family troubles, can increase the chances of a student making the decision to drop out of a course, or out of school altogether.
3. It has been suggested that automobile accidents are more likely to involve individuals with certain traits (e.g., age, gender, experience, previous accidents). In fact, car insurance rates fluctuate based on this information. Likewise, research has shown that students exhibiting certain characteristics are more prone to dropout than others (Tinto, 1975; Terenzini & Pascarella, 1980; Bean, 1980).
4. Despite the fact that they cannot be predicted, the conditions leading to and reasons for each incident can be investigated and analyzed after the fact. This information can then be used to implement interventions that will hopefully deter further accidents (e.g., new laws, road repair). Similarly, once a student has dropped out of a course, information can be gathered directly from them to put in place measures to prevent further attrition, such as making the necessary changes to the course design or structure.
5. Automobile accidents can have physical, psychological, and emotional effects on those involved. Although dropping out of a class or a programme cannot quite compare to this, it should be noted that much of the research on student retention (e.g., Spady, 1970; Tinto, 1975) is grounded in findings from studies on suicide.

Granted, comparing a car accident to student retention may appear to be a stretch, the point Munro (1981) wanted to make is that despite all that we know about automobiles, and despite all the experience we may have in driving them, accidents are such a complex issue that they cannot be accurately predicted. However, stakeholders, be they lawmakers, construction workers, car manufacturers, or the drivers themselves, all have a part to play in helping to

prevent accidents. This holds true with regards to student retention. Although we cannot truly predict which student will drop out and which will not, in much the same way as road accidents, all stakeholders have a part to play in helping to prevent it. Moreover, the drivers may be the ones with their hands on the wheel, but the educational institutions oftentimes underestimate the influence they have on such decisions (Braxton, Hirschy, & McClendon, 2004).

For students, successful retention culminates with the attainment of their educational goals. These goals may include completing a given course, or acquiring a skill needed for employment. But in higher education, these goals are usually part and parcel of a greater goal, namely the successful completion of a programme of study and the obtaining of a university degree. To accomplish this goal, students must transfer previously acquired knowledge, skills, habits, and attitudes, and adapt them to an institution with a unique academic and social culture. This foreign environment will offer challenges that learners must overcome, in conjunction with overcoming their own personal obstacles, in order to attain their educational goal. Sometimes they will find a way to make the necessary adjustments and persist in their studies, and sometimes they will not. For students, academic persistence is very much a question of survival.

Just as there are several reasons behind student departure from a course or programme of study, there are also many ways in which it can happen. For example, students who have not paid their tuition or are failing a number of courses may be forced to leave by the institution itself (for financial or academic reasons). Notwithstanding, it is the student's voluntary decision to leave, and their subsequent action, that retains our attention in this research. Granted, that decision may be greatly influenced by a lack of money to pay for tuition or by poor academic performance, but the choice to walk away ultimately falls on the student.

Retention specific to online learning introduces an added complication for researchers. The medium of instruction used to deliver the content, as well as the main mode of communication between students and instructors, is mediated by evolving technologies and is not constrained to the standard classroom. Furthermore, the control of the learning experience shifts to the

learner who can access the course content from any location, and at any time, particularly in asynchronous environments. In addition to the questions posed in traditional settings, one must also consider the reasons why the learner decided to take a course offered this way in the first place. Do they have needs that differ from students who opt for classroom instruction? Are they the same types of learners? Do they drop out for the same reasons?

## **Background**

There is consensus in the literature that there is a higher dropout rate in online (and distance education) courses than in courses offered in the traditional, face-to-face format (Parker, 1999; Frankola, 2001; Xenos et al., 2002; Levy, 2007). Carr (2000) reported that the difference between the attrition rates of the two modes of instruction ranged anywhere between 10 and 20 percentage points, with dropout being as high as 50% in some distance education courses.

Unfortunately, there is a tendency in educational settings to equate dropping out with academic failure, which is an unfair and incorrect assumption (Diaz, 2002). As Bean (1980) noted, not all attrition is bad since students could have very legitimate reasons to leave a program. For example, students may drop out to pursue other career opportunities or because of health problems. Diaz (2002) suggested that some students will voluntarily discontinue their online course because their priorities have shifted, making dropping out “the right thing to do.” Academic departures, on the other hand, reflect a student’s inability or unwillingness to meet the minimum academic standards, which ultimately led to their dismissal. These students may have individual abilities, but lack the necessary study skills, or have poor study habits (Tinto, 1993).

With regards to institutional retention, some may argue that dropout is a good thing. If there was no attrition at a given academic institution, its credibility as a provider of quality education would be questioned (Simpson, 2003). A university’s standards would be questioned if all students were retained and eventually graduated. On the other hand, others would argue that having too many students dropping out would elicit similar public perceptions about the quality

of an institution (Braxton et al., 2004). Solely using institutional retention rates to assess the performance and quality of a school or programme is “misleading since it fails to consider the influential effect that can be directly attributed to differences in the kinds of students enrolled at that school” (Astin, 1997).

Online courses have yet to fully emerge from the shadows of earlier examples of distance education, such as correspondence courses. The reputation of online courses has been usurped by companies who prey on individuals seeking alternative pathways to advance their skills and careers by offering them these opportunities via distance education. As Daniel (1996) has pointed out, public sector institutions used a variety of terms such as home study, external study, and independent study, likely because of the “dubious ethics and poor quality” of commercial distance education schools associated with the term correspondence study, one of the earliest forms of distance education. Suspect instructional design, false advertising, and poor delivery methods have led to client dissatisfaction, unmatched expectations, and unattained goals, and as a result, a high number of dropouts. Consequently, the perceptions and attitudes that have been cultivated through substandard experiences with correspondence courses, which relied mostly on a book-based curriculum, have oftentimes been applied to Web-based courses despite their obvious differences.

The reputation of online courses has also been tarnished by organizations that take advantage of the medium to award academic degrees for little or no work. These “diploma mills” will sell clients the degree of their choice based on their “life experiences”. These diplomas often come from non-existent universities, or from non-accredited academic institutions (Mayfield, 2000; Noble, 2002; Mabrey, 2004). Although the proliferation of such businesses is not surprising as they have existed in some capacity before online courses, Maddux, Ewing-Taylor, and Johnson (2002) have pointed out that “what is startling and disappointing is that many traditional and prestigious institutions have begun to offer low-quality, online programs of their own.”

Based in part on these misrepresentations and abuse of online learning, cynics are quick to target the medium of instruction itself as being inferior to the traditional methods. This despite the fact that numerous studies comparing the efficiency of online courses to those offered in the traditional format have concluded that there is no significant difference between the two (Bernard et al., 2004a). In other words, students enrolled in online courses perform no worse in applied knowledge situations (i.e., exams, assignments) in a given subject than those registered in comparable courses offered in the traditional, face-to-face format. Therefore, to justify their argument, detractors of online courses have pointed to the lower retention rates of distance education as proof of the inferiority of the medium.

Claims of lower retention rates in online learning bring up another misconception that must be addressed. Previous studies on retention have attempted to develop a model for predicting student performance (Cabrera, Nora, & Castaneda, 1993), whereas others have tried to isolate characteristics that could lead to dropping out of a course or programme (Berger & Braxton, 1998). These studies were conducted in a traditional classroom setting, usually involving freshmen students enrolled full-time in a residential university in the United States. The next phase of retention studies involved researchers focusing on the retention patterns of particular subgroups of students, such as visible minorities and adult learners.

When the studies shifted to distance education, most of the courses under investigation involved text-based correspondence in which the majority of students were adult learners. To some, the lower retention that plagued these courses became synonymous with the inferiority of the medium of delivery, and this prejudice transferred to distance education courses offered in various other formats. However, this generalization was mostly based on “non-traditional” students who represented the first group of learners who embraced these unconventional methods of instruction (Kember, 1989). Any further attempt at explaining the behaviour of online learners must take into account the varied nature of the students involved in the study.

Studies on retention in online courses pose a special challenge to the educational researcher as it is a complex and dynamic phenomenon that has implications for many different stakeholders. Simpson (2003) lists several reasons why student retention in open and distance learning environments is important to study in higher education, including:

- Changing student demographics in higher education has introduced groups of learners who are more difficult to retain.
- Retention in online courses has been continually demonstrated to be worse than in classroom-based environments.
- There is evidence that retention rates in online courses have worsened over the past two decades.
- The economies of scale are increasingly obvious to educational institutions.
- The idea that students drop out because of reasons beyond the educational institution's control is proving to be false.
- Governments and educational administrations are demanding better retention figures.

## **Statement of the Problem**

Although there is an abundance of research on retention as a whole, this is not the case for studies that are specific to undergraduate online course retention. Therefore, in order to fully understand the scope of retention in this particular environment, the scope of the analysis must be broadened to include attrition in other instructional contexts.

One of the most common, yet basic problems underlying retention research is a failure to properly define what is meant by retention. For instance, the terms “persistence”, “departure”, “dropout”, and “attrition”, have all been used up to this point to describe some aspect of retention. In addition to the ambiguous use of terminology to describe the phenomenon, the way retention is measured is not only vague in many published reports, but is often missing altogether (Tinto, 1975; Munro, 1981; Carr, 2000). Needless to say, the ambiguity in defining the terminology and metrics leads to the misinterpretation and misunderstanding of the results of

the studies, and undermines the value of retention research to administrators, especially if there is no way of comparing the results within their own institution.

The majority of the research on retention, regardless of the medium of delivery, has focused on dropout from academic programs in face-to-face environments. This poses two significant problems for applying the results of those studies to online courses. First, conclusions from these analyses were derived from first-year (freshmen) students enrolled in full-time studies in a residential educational institution where the primary mode of instruction was a live, traditional classroom environment. Secondly, these studies were conducted over an entire programme of study, which could span several years, depending on the degree. There may be significant problems generalizing from these older studies to an environment where students are not only off-campus, but are conducting their studies at their own pace, and where the focus is on individual courses that typically last one semester. Although there is no denying that there must be some commonality with the attrition problem in classroom-based courses, the application of dated retention models and theories cannot be assumed to be equivalent to the factors affecting online courses in higher education today.

Furthermore, of the longitudinal studies that have been conducted (e.g., Terenzini & Pascarella, 1980; Pascarella & Chapman, 1983) the dropout metric was applied between years of study. In other words, researchers considered a student to have dropped out of their programme of study if they did not return the following year. This methodology would be incapable of providing information pertaining to when a student makes the decision to drop out of a course, let alone the reasons for it. By gaining a better understanding as to why students discontinue their studies, and by pinpointing the times they are more susceptible to make this unfortunate decision, educational administrators, instructional designers, and instructors, would be better informed to design and implement strategic interventions aimed at curtailing the behaviour as early as possible (DesJardins, Ahlburg, & McCall, 1999).

To further complicate matters, the typical undergraduate student who roamed the university hallways prior to the year 2000 is very different than that of today. Not only has the cultural landscape of the student population drastically changed over the years (Horn, Berger, & Carroll, 2004), but the commercialization and competition that is omnipresent in today's education system has fostered an increase in the number of students seeking alternate modes of instruction. These include part-time studies, open enrolment standards (i.e., not bound by enrolment periods or pre-entry requirements), community colleges, adult and continuing education, and distance education.

The increased popularity of distance education via correspondence was very much fuelled by the gradual inclusion of non traditional learners into the student body. As a result, previous research conducted on persistence in distance education was not only based on older classroom models, but assumed that distance learners were "non-traditional" students (Kember, 1989). In other words, the profile of the typical distance education student, compared to classroom-based learners, was they tended to be older, studied part-time, had family and work responsibilities, lived away from the campus, and generally possessed more academic experience (Rovai, 2003). This may have been true at one point in time, when distance education was seen as the choice of the lifelong learner, who, because of other responsibilities, could not devote all the necessary time and energy required for full-time studies. However, this does not necessarily reflect the situation that is present today.

The evolution of technology, particularly the introduction and mass adoption of personal computers and the Internet, has catalyzed the rapid increase in the production of online courses and subsequent acceptance by institutions of higher education. This medium of delivery, with its potential to offer instruction in rich, multimedia environments, coupled with its ability to foster mass and personal communication, offers different opportunities and challenges when compared to distance education courses offered mainly via correspondence.



With the increased availability of online courses at offered by traditional educational institutions, not only has their popularity flourished, but so has their clientele (Allen & Seaman, 2006). In a report by Allen and Seaman (2007) for the Sloan Consortium, it was noted that approximately 20% of all undergraduate students in the United States were taking at least one online course during the fall 2006 semester, a figure that has doubled over a four-year span. Consequently, one cannot assume that students enrolling in distance education courses today are the same type of students who undertook similar courses twenty, ten, or even five years ago. The student population's skills, particularly with technology, have evolved, as have their expectations about using this technology for learning.

These expectations are not unique to online learners, as students in face-to-face environments in North American educational institutions today have likely experienced distributed (also known as blended or hybrid) learning environments where there has been a mix of in-class instruction coupled with the use of e-Learning technologies (Acemian, Devey, & Schmid, 2006). Others may even be blended learners and are enrolled in traditional, face-to-face courses, while taking other courses entirely online. Therefore, any study that attempts to explore student retention in a given educational environment must analyze the students enrolled in the courses.

The demographics of students in one university may vary considerably from another, and as a result, the reasons why they enrol in and drop out of online courses will invariably differ as well. For example, much of the sparse research conducted on retention in online settings is based on students enrolled in Open Universities. The entry standards at these institutions, as well as the format of the courses, may make comparisons with other types of online courses at more traditional research-based universities problematic. For instance, some open concepts stipulate that learners are free to begin and end their studies as they wish. How would retention be measured in these settings? Furthermore, this arrangement may be more suitable to a particular clientele with unique characteristics and educational needs. Consequently, comparing research conducted in one online setting to another is not straightforward.

Many of the studies that focus on dropout in online courses have the tendency to equate success with persistence (Rovai, 2003). In other words, there is an assumption that the factors that lead to academic success (i.e., good grades) are the same ones that retain the students in that course. Although a student who is doing well in a course may indeed be more likely to complete it, this does little to explain why a strong student withdraws from the same course, or why a weaker student will write the final exam. In addition, the issue of persistence presents a *methodological problem to researchers*. In many cases, only the students who persisted in their studies are included in the data used for the research.

On the other hand, dropouts, who should be the focus of a research project, are often ignored. This is particularly true in studies where data is collected after the course is completed. In these cases, the information gathered by the researcher comes from surveys and interviews completed by students who finished the course. The conclusions made in these situations therefore isolate the characteristics of a successful online learner, and the at-risk students were simply identified as those not having the qualities the successful students possess. Unfortunately, in these studies a wealth of information regarding why a student drops out of a course is lost when they depart. Of the few studies that do include students who have dropped out, Grayson and Grayson (2003) put forward that they are “plagued with small samples, low response rates, insufficient conceptualization and different operationalizations of similar concepts from one study to the next”.

Lastly, the theoretical foundation of the original studies themselves can be seen as another hurdle for retention research, although they have served as the foundation of much of the literature. For example, Tinto’s (1975) model, which is considered by many to be the seminal work on retention research, is based on a perceived connection between Durkheim’s (1951) work on suicide, Van Gennep’s (1960) research on the rites of passage, and a student’s decision to voluntarily dropout of school. Bean (1980) rejected this notion and opted to base his model on Price’s (1977) work on employee turnover, which puts more emphasis on the role of the institution in retention. Do the characteristics that describe the rites of passage for a traditional

freshman entering university for the first time, as suggested by Tinto (1975), emulate the experiences of a second-year student taking their third undergraduate online course today? Can the awarding of good grades really be seen as a pay surrogate measure for students, as suggested by Bean (1980)? One could argue that the little amount of variance that can be explained by these and similar retention models which are based on such assumptions is cause enough to start looking to new avenues in the hope of better explaining the dropout phenomenon.

The increased accessibility of courses offered all over the world (i.e., via distance education) has fostered an environment where universities must focus on offering timely, high-quality services, not only to recruit new students, but also to retain the ones they have. In other words, with educational opportunities being increasingly available via distance education, universities must consider offering online courses and other alternative educational opportunities if they are to remain competitive in the global marketplace. Accordingly, retention could become less a matter of academic interest, and more one of institutional survival (Bean, 1982).

## **Research Questions**

This exploratory research is guided by five general questions:

- What is the profile of the students enrolling in online courses at Concordia University? How do they compare to the general student population? How do they compare to student populations in the distance education literature?
- Why are students enrolling in online courses? What expectations do they have about their online course? What prior educational experiences and skills do they bring to their online course?
- Why do students drop out of online courses? Are there demographic, attitudinal, integration, and/or behavioural variables related to persistence?
- Are there particular points during the semester when students are at a higher risk of dropping out of their online courses?
- What interventions can the institution take to curtail attrition in online courses?

## Purpose of this Study

This study aims to accomplish several objectives, and in so doing, advance the field of retention research in a way that allows educational institutions to be more proactive in limiting student dropout in areas where they can affect it.

This exploratory study is intended to update the demographics of the students enrolled in online courses at Concordia University. The literature has been rather bombastic in its attempt at profiling the characteristics of learners who voluntarily enrol and discontinue distance education courses. These studies are often conflicting, outdated, and based in institutions that are quite unique. Consequently, applying what is learned to other unique contexts is limited. Are students enrolling in online courses truly non-traditional? Does this type of learner still exist today or is this distinction obsolete now that educational opportunities abound?

This study will also focus on two areas where research on student attrition is quite scarce: retention in online environments in general, and, more specifically, retention in individual online courses. Previous retention research in distance education has focused mainly on *correspondence courses, and not in complete asynchronous online learning environments*. Although there are some similarities between correspondence courses and Web-based courses (e.g., pacing, flexibility of study), the multimedia potential of content delivery in online environments, coupled with its ability to foster various types of communication, offers unique instructional opportunities.

In addition, by focusing on individual courses instead of entire programmes, interventions can be tailored to curtail attrition behaviours within the context of the individual course during the semester, as opposed to waiting until the student has dropped out of the programme, when it is too late to intervene. Research on programme retention has identified that students are more likely to drop out within their first year of study (Tinto, 1982; Bean & Metzner, 1985; Sweet, 1986). This has led to the implementation of interventions such as orientation programmes, courses on study skills, and peer mentoring. However, perhaps by focusing on individual

courses, the high risk periods for dropout can be isolated to particular times during the semester. Furthermore, one can isolate possible confounders, such as the instructional design and the subject matter of each course, when analyzing retention patterns. In doing so, educational institutions would be better able to proactively introduce specific intervention strategies to curtail attrition, instead of reacting after the fact. In other words, it would allow for the prevention of enrolment leaks rather than plugging them after they have begun.

Much of the previous research on retention in distance education settings has relied on information gathered from students who have completed the course to guide their interventions. If one is to truly understand the issues that lead to a student's decision to voluntarily drop out of their online course, then it is the information gathered from these students that should be at the heart of retention research. One cannot assume that dropouts do not possess the skills, attitude, or desire to succeed that their colleagues who have completed the course seem to possess. Even good drivers will be involved in car accidents.

Higher dropout rates in online courses should not be attributed to an inferior mode of instruction. Media-comparison studies have concluded that students taking online courses perform just as well as those who prefer face-to-face instruction (Bernard et al., 2004a). However the fact remains that the reputation of online courses has been tarnished by poor experiences with previous forms of distance education, especially by diploma mills that award "degrees" for little or no work. But despite the detractors that feel threatened by this mode of instruction, courses given online are slowly gaining acceptance in the marketplace (Allen & Seaman, 2007). And if institutions of higher learning, having already established a reputation for quality education, are offering online courses and degrees, it is but a matter of time before these issues dissipate. By tackling the retention problem in online courses, this study aims to push the process in that direction.

Lastly, if institutions are truly interested in becoming agents of change by designing interventions to curtail attrition in their online courses, they must concentrate their efforts on

recognizing the areas where they can be most influential. For example, by identifying the earliest signs of dropout behaviour among students in a given online course and intervening to curtail it, an institution would be demonstrating a proactive approach aimed at retaining their students. However, the challenge herein lies foremost in the identification of the areas where the institution can be most influential.

## **Definitions**

One of the major problems with research on retention is the definition of what is meant by retention, and how it is to be measured. Each institution has its own policy regarding registration deadlines. Concordia University is no exception. For the first two weeks of every semester, students are allowed to add and drop courses without any financial penalty. This is akin to a trial period, allowing students to experience the course without being penalized for not committing to it. If they like the experience, or have no alternatives, they stay in the course. But, if they are unhappy with their schedule, the teacher, the subject matter, or simply have found better options, they can elect to drop the course without academic penalty and get a full refund on their tuition and course materials. This deadline is known as the “Did Not Enter” or “DNE” deadline.

Once the DNE deadline has passed, students are officially considered to be registered in the course and, consequently, must pay the fees associated with it. However, students are still allowed to drop the course, without academic penalty, up to the ninth week of the semester. This situation does entail a financial penalty as their tuition is not refunded, but no academic penalty is applied as the dropped course does not count on their academic record. This deadline is called the “Discontinued” or “DISC” deadline. After this point, students are no longer allowed to withdraw from courses in which they are enrolled.

Since this study is focused on retention in individual courses, measuring the phenomenon will focus on activities during a given semester and not on the multi-year persistence of students in their programme of study. One of the main challenges in measuring retention is deciding where

the baseline should be set (Simpson, 2003). With this in mind, measuring retention in courses cannot be done simply by counting the number of students who were enrolled the first day of class and comparing this to the number who completed the course. Doing so would yield a biased estimate for course retention since it would not include students who added courses up to the DNE deadline. Instead, this type of measurement would yield the net gain/loss in class registration from the onset of a semester to the close, which is not an effective way of identifying individual dropouts.

For the purposes of this study, the following definitions will apply:

- *Retention*: A learner is considered to have been “retained” if they have not voluntarily dropped the course by the academic withdrawal deadline. Concordia University’s “discontinued” (DISC) deadline will be used as the cut-off point, meaning that students who are still enrolled in the course after the ninth week of a given semester will be considered retained. Synonyms: persistence, completion, continue.
- *Attrition*: Students who were enrolled in the course after the official add/drop period (DNE deadline), but who voluntarily dropped the course before the DISC deadline, are considered to have officially dropped the course. This is the opposite of retention. Synonyms: dropout, withdrawal, discontinue, non-persistence, wastage.
- *Retention Rate*: The ratio of students who officially remained registered in the course after the DISC deadline divided by the total number who were enrolled after the DNE deadline.
- *Attrition/Dropout Rate*: The ratio of students who have a “DISC” for the course over the total amount of students enrolled in the course after the DNE deadline. This is the opposite of the retention rate.

Therefore, students who are considered to have dropped out have completed the “trial” period of the course. They were motivated enough to want to complete it, yet for some reason they changed their minds and were penalized financially for dropping it. By using this definition of retention, students who failed to officially withdraw from the course yet had essentially ceased

(or never attempted) to participate in the course for a variety of reasons, will invariably be included in the calculations. It is also understood that these definitions do not account for a student's success/failure in the course, nor the completion of all the assigned activities. However, and more importantly, it also means that students who were originally enrolled in the course, but changed their minds before the "DNE" deadline, are not considered to have "dropped out".

Throughout this study, the terms "retention" and "persistence" will be used interchangeably, as will "attrition", "dropout", and "non-persistence". Furthermore, it is understood that the term "drop out" refers to the behaviour of withdrawing from the course or programme of study, whereas "dropout" is a noun that refers to an individual who has made and acted on the decision to cease their studies.

Also used throughout this dissertation, will be terms such as "traditional" and "non-traditional" when describing the status of certain students, as well as their learning environment. With respect to students, "traditional" represents a learner who has entered university directly out of college or CEGEP, and has not interrupted their studies for a significant amount of time at any point in their educational career. These students enrol as "full-time" program students, meaning that they take a full course load every semester with the goal of graduating with a degree in the usual three to four year period, depending on their programme. "Non-traditional" students tend to be older, are enrolled in less than four courses a semester (i.e., part-time student), and may have come back to school after an extensive suspension in their education. Consequently, non-traditional students often have more work or family responsibilities, and may have more post-secondary experience than the typical freshman (Rovai, 2003).

A traditional learning environment includes a classroom in which a professor typically lectures to students in a live, face-to-face setting. This does not imply that students are not exposed to other educational approaches, such as collaborative, constructivist, or distributed learning environments, but in a traditional setting, the majority of the instruction is carried out in a



classroom. Therefore, for the sake of this dissertation, traditional learning will be considered synonymous with any classroom-based, face-to-face instruction.

The learning environment of interest in this dissertation revolves around asynchronous Web-based courses. In other words, it is implied that the course content can be accessed from anywhere, and at anytime via the World Wide Web. In addition, the asynchronous nature of the courses suggests that students are free to pace themselves throughout the semester and are not bound by meeting times with the instructor and/or their classmates, as is the case in synchronous online courses. However, students in these courses must abide by the deadlines to complete their course work. Therefore, it should be noted that the self-pacing refers to accessing and learning the course content within the semester.

Although online courses could encompass both synchronous and asynchronous elements, it is assumed that the terms “Web-based course” or “online course” will refer to designs in which the content is delivered to the learner in a predominantly asynchronous environment, unless otherwise specified.

## **LITERATURE REVIEW**

As it stands, due to the relatively new phenomenon of Web-based (online) instruction, and its subsequent adoption into mainstream course offerings by otherwise traditional educational institutions, there is a definite lack of studies examining retention specific to online courses. Although this is not as much of an issue in distance education studies involving mostly correspondence (text-based) courses, the wealth and scope of the literature pales in comparison to the classroom-based retention research that preceded and fostered it. Therefore, in order to begin to understand the complex issue of online retention, one must first explore the literature dealing with classroom-based attrition in the hopes that it can provide theories, models, and practices which are relevant to distance education (Simpson, 2003). From such a review, the findings that applied to general distance education were identified, and those that could be associated to asynchronous online courses were isolated and repurposed for that setting.

### **The Genesis of Retention Research**

There is no shortage of research on student retention. Indeed, some will claim that, of all the research conducted in higher education settings, retention has been the most popular subject of interest and the body of literature spans at least seven decades (Spady, 1970; Berge & Huang, 2004). Summarizing this work is no easy task, especially when the theories and models that much of the research is based upon have been borrowed or adapted from different disciplines, and there is no consensus on an adequate description of the phenomenon (Brindley, 1995).

One way of providing a summary of this early research is by dividing the studies according to the fields of expertise that generated them (Tinto, 1993). The first attempts to explain attrition had their roots in psychological theories and models. The focus of these studies was on the

individual students: their actions, abilities, motivations, and behaviours in an educational setting.

One of the major criticisms of these early studies was that they focused too much on individual behaviour, and ignored the effects of the environment in which the subjects found themselves (Bean, 1980). Because of this, the conclusions drawn were of little use to policy makers. The role of the educational institution in the student's decision to persist in their studies was nonexistent. In fact, the only means by which educational institutions could somewhat affect retention rates was by screening the applicants to their schools and accepting the candidates who were believed the most likely to complete their studies. There was therefore a need to improve on this research through the development of theories that focused on the environment and its role in contributing to the withdrawal behaviour (Tinto, 1993).

Retention theories grounded in sociological concepts, on the other hand, viewed a student's decision to leave school within the context of one's place in the greater societal structure. Individual personal characteristics were ignored in favour of external factors such as one's social status, or race, as well as the educational institution's prestige (Tinto, 1993). In these studies, the focus shifted from the individual to the societal (micro to macro) causes of dropout. However, they still omitted the possible effect of the institution itself on the dropout decision, as well as the interactions that individuals could have within that institution. Once again, educational administrators found these models of negligible use in affecting the retention rate.

The field of economics contributed yet another approach to understanding retention. For the economist, the decision to drop out of school is akin to any other basic economic decision which weighs the costs and benefits of remaining in school against the other ways in which one's limited resources can be spent (Voorhees, 1987). Mind you, some would argue that the effect of financial resources on persistence in college plays a greater role in the decision to begin studies, and that as long as they are satisfied with the experience students are willing to undergo financial stress in order to continue their schooling (Tinto, 1993). Either way, it was put forward

that students who are satisfied with the costs incurred as a result of their sustained attendance at the educational institution are more likely to persist in their studies (Cabrera, Stampen, & Hansen, 1990).

Some researchers have suggested that students who have paid their own fees are more motivated to complete their studies than those who receive financial assistance (Simpson, 2003). In a study by Zajkowski (1997), it was found that students whose employers paid for courses, with the condition that they passed, were less likely to drop out than students whose fees were covered by work regardless of the resulting grade. It is also interesting to note that students who paid for their own schooling were more likely to withdraw than if their employers had paid the course fees for them.

Along with finances, the cost-benefit analysis also considers a student's effort and energy as resources. With that in mind, a cost-benefit analysis could involve the evaluation of the end-results (i.e., a good grade on a term paper) in relation to the continued efforts within a given course or programme (Kember, 1989). For the educational administrator, economic theories of departure are slightly more relevant because of their influence on the cost of tuition and materials. However, these theories are still of limited use when it comes to providing practical information to an institution considering adopting anti-attrition policies.

Organizational theories are at the opposite end of the spectrum from student-based theories. They focus exclusively on the role of the institution in attrition process. When comparing student departure to employee turnover in work organizations, Bean (1980) posited that the decision to leave is highly influenced by the institution itself. This angle puts much more emphasis on the environment in which the students find themselves, as well as their interactions within that environment, and much less on the individuals. Unfortunately, models of this nature were unable to adequately and accurately predict student attrition behaviour.

Another way to explore past retention research is to survey the models that attempted to explain attrition behaviour. Bean's (1982) summary of the retention models will serve as a guide for this review. This summary will put into context the importance of Tinto's (1975) Interactionalist Model of Student Persistence as a seminal contribution to the field of study. The bulk of this section will analyze the main components of Tinto's model before exploring subsequent responses to it. Despite the fact that the applicability of the model continues to be questioned, debated, and deconstructed to this day, there is no denying that it has served as a foundation for many of the studies on student persistence that followed.

In a review of the research up to that point in time, Bean (1982) sorted the existing retention models into six broad categories, although it could be argued that the first two are not really models (Kember, 1989).

The first category grouped descriptive studies devoid of any theoretical backing (general demographic statistics). The second dealt with attempts to link the pre-entry characteristics of learners to their subsequent persistence or withdrawal from their studies. The latter type of study was more noteworthy in helping to establish entry guidelines for school applications rather than in contributing to the research that explained attrition behaviour.

The third category can be described as a "person-role" model, where the emphasis of the study was on the relationship between a learner's characteristics and their role within the educational institution. Although the lone study cited in this category is by Rootman (1972), Kember (1989) suggests that studies by Thompson (1984) and Boshier (1971, 1972), could also be included. This research had a tendency of being descriptive rather than analytical, either by comparing the attributes of students who enter a program to those who graduate, or by profiling the students who leave (Tinto, 1993). These studies provided general demographic information about the student who is most likely to leave their programme and had limited use for educational administrators.

Bean (1982) isolates a model by Fishbein and Ajzen (1975) into his fourth category. It focused on a learner's self-reported intentions and their subsequent behaviour. Although the model was linear, it also introduced the notion of a feedback loop in an individual's perceptions, attitudes, intentions, and actions with regards to the behaviour. That is, it recognized the fact that these measures can change over time, and one's decision to continue at school may change accordingly. Unfortunately, these studies had limited practical use for educational administrators since they did little to explain the development of the decision to leave higher educational institutions.

In order to investigate the development of the dropout decision, one would need longitudinal data that would essentially track the student throughout their life at the institution (Tinto, 1975). Hence, the fifth category of retention models was described as "longitudinal-process models". These investigate the learners' pre-entry characteristics, their interplay within the context of the educational institution, and their subsequent decision about dropping out. Bean (1982) included the models developed by Spady (1970), Tinto (1975), and Pascarella and Terenzini (1980) in this category. Bean and Metzner (1985) later developed a model of non-traditional undergraduate student attrition that could also be categorized under this classification. Models in this category, which included Tinto's seminal work, were useful in explaining the dropout decision process, but account for very little explained variance when put into practice.

The sixth category contained a model developed by Bean (1980) that was inspired by a study on the turnover rate of nurses conducted by Price (1977). This model differed from the previous category in that it investigated the interactions from an organizational standpoint. It also placed more emphasis on the effects of external variables on the dropout decision. Again, this model was unable to account for the majority of the explained variance when put into practice.

## ***Tinto's Interactionalist Model of Student Persistence***

Prior to the development of Tinto's model there had been very few multivariate analyses that allowed a researcher to breakdown and analyze the progression of the dropout decision (Pascarella & Terenzini, 1983). There was no way of determining the existence, nor the magnitude of the effects that numerous possible factors could have on attrition, either because of the research design, or because of the types of variables used. Previous studies had attempted to predict retention through the use of various statistical correlational techniques, but with limited success and practical use to educational administrators.

In seeking a way to look at student departure as a longitudinal process, Tinto was inspired by the work of anthropologist Arnold Van Gennep. While documenting the rites of passage in tribal societies, Van Gennep (1960) identified three distinct stages:

1. *Separation* is characterized by a decrease in interactions with the old group.
2. *Transition* occurs as the individual finds ways of interacting with members of the new group. Techniques such as isolation, training, and ordeals are used to ensure separation from the old group and to reinforce new behaviours.
3. *Incorporation* into the new group is sometimes marked by some sort of ceremony to acknowledge one's successful establishment of membership.

The similarities between the rites of passage in Van Gennep's tribal observations and a student's attempted integration into higher education are apparent, especially when applied to new students. In the separation stage, students cut ties with their previous educational institution, their social communities and, to a lesser extent, with their families as they move away from home (if they attend a residential college). In the transition stage students attempt to "fit in" and acquire the norms and expectations of the new community (Tinto, 1993). This is a vulnerable stage for students who are not prepared to face the added stress, and is often compounded by feelings of isolation. Early withdrawal may be the end result for some students at this stage. Tinto (1993) suggests that the incorporation phase is marked by students joining

student unions, fraternities, sororities, and intramural sports, as well as other extracurricular activities. This can aid students in becoming full members of the new community.

However, where Van Gennep's theory of rites of passage falters is in its failure to explain how the student moves to the incorporation stage through these informal interactions (Tinto, 1993). For that piece of the puzzle, Tinto turned to the work of Spady (1970, 1971) who had associated one's decision to drop out of school, to an individual's decision to cease to live all-together.

Although the link may seem obscure, even depressing at first, research on retention had its roots in studies conducted on suicide. French sociologist Emile Durkheim theorized that individuals who committed what he called "egotistical suicide" did so primarily because of a perceived failure of integration and lack of collective affiliation with the social community (Durkheim, 1951). Durkheim suggested that individuals can become integrated socially through personal interactions with community members (collective affiliation), as well as intellectually, by sharing common values and beliefs (normative integration).

Durkheim's theory of suicide is a descriptive model which seeks to explain the various conditions that may lead to different types of suicide in society. It is not a theory that can explain why students may leave college, but according to Tinto (1975), its notions of social and intellectual integration can certainly aid in explaining the behaviour that could lead to voluntary academic dropout.

Spady (1970) suggested that colleges are made up of social and academic systems, and that it was important to distinguish between them. Because one's withdrawal from higher education could be either voluntary (the student's decision) or forced (the school's decision), it suggests that one could be integrated in one system, but not in the other (Spady, 1970). Rootman (1972) applied this work to a freshman class at the United States Coast Guard Academy and found that of the students who voluntarily dropped out, most did so because of a perceived lack of "person-role" and "interpersonal" fit.



Thus, building on the work of Spady (1970) and Rootman (1972), Tinto (1975) suggested that student attributes and characteristics (i.e., gender, family background, pre-college experiences) when entering college not only have an effect on their decision to persist in their studies, but also produce varying initial commitments to the institution and to the completion of their degree. These commitments and characteristics play a crucial role in the student's academic and social integration within the educational institution, and ultimately, influence their decision to continue in their studies (Figure 1).

In order to understand the attributes and relationships presented in this model, as well as to fully appreciate the controversy that it subsequently generated, each major piece will be dissected in the context of the previous literature.

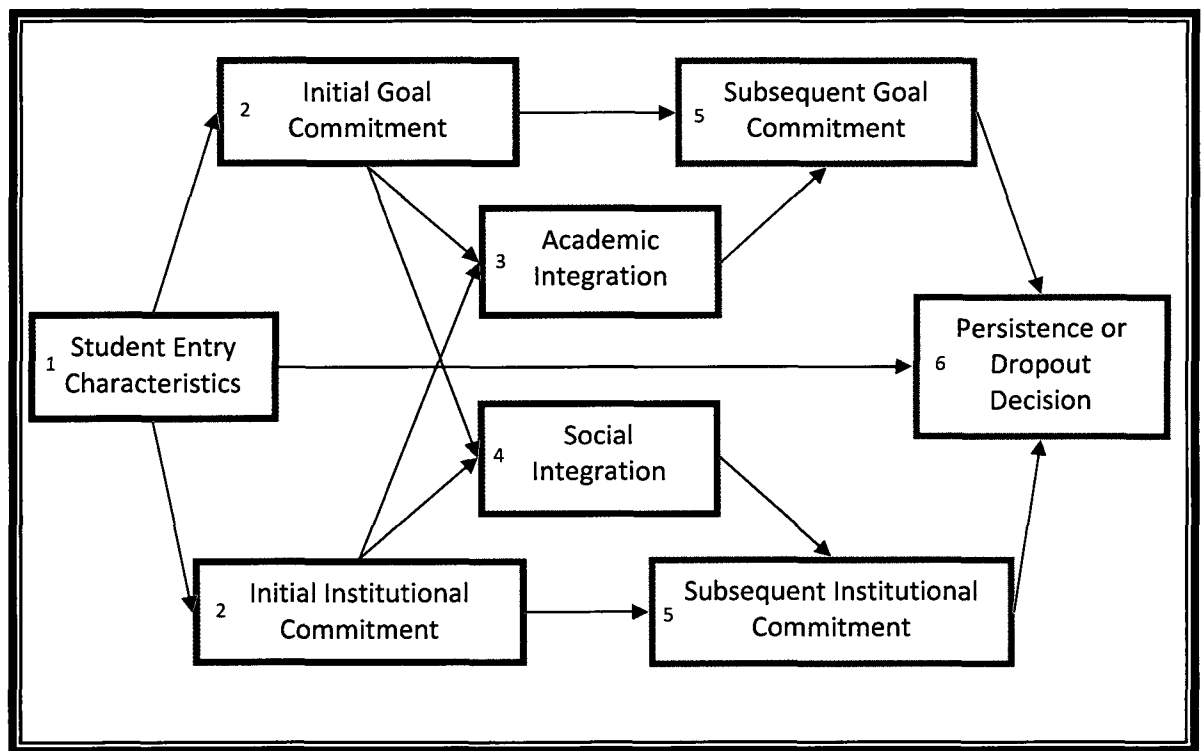


Figure 1. Tinto's Interactionalist Model of Student Persistence. Adapted from Tinto (1993)

## **1. Student Entry Characteristics**

According to Tinto's model, student characteristics have both direct and indirect influences on a student's decision to persist in higher education. He posits that certain background traits, personal attributes, dispositions, and skills, as well as previous experiences and achievements, will have a direct impact on a student's decision to continue their post-secondary studies. He further argued that these same characteristics will also have an indirect effect on the dropout decision by influencing an individual's initial goal and institutional commitment levels (Tinto, 1975).

### **Family Background**

Previous studies in retention have hinted that a student's socioeconomic background has a direct influence on one's retention in college (Astin, 1964; Sewell & Shah, 1967). Specifically, Sewell and Shah (1967) suggested that students who come from families with a lower socioeconomic status were more prone to drop out, despite controlling for intelligence. A popular measure for socioeconomic status has traditionally been family income, but Astin (1972) cautioned that this variable may have a decreasing influence. Tinto (1975) has suggested that financial concerns are more of a factor in making the decision to enter college, and this does not explain why students voluntarily drop out once they initiate their studies.

Instead of using family income as a measure for socioeconomic status, it has been found that the parents' educational background can not only substitute as a metric, but it also has a positive effect on persistence (Horn & Carroll, 1998; Porter, 1999). Spady (1971) suggests that students who have parents who are highly educated are more likely to persist in their studies, and that this may be a better measure for socioeconomic status. This argument is supported by Nora, Attinasi and Matonak (1990) who speculate that individuals with highly educated parents are more prone to establish higher expectations with regards to their education and, consequently, are more likely to strive for, and achieve them.

## **Individual Characteristics**

A popular method for identifying students who are more susceptible to drop out, likely because this information is easily attainable using the institution's student registration records, involves the disaggregation of the demographic data to search for differences between students who persisted and those who did not. This technique allows researchers to identify retention patterns based on variables such as gender (Pascarella & Chapman, 1983) or prior academic experience (Sewell & Shah, 1967; Bean & Metzner, 1985).

With regards to gender, males had higher persistence rates than females, but of the students who dropped out, a higher proportion of women did so for voluntary reasons as opposed to academic failure (Spady, 1971; Astin, 1972). Others have argued that females are more likely to persist in their studies (Woodley & Parlett, 1983; Butlin, 2000). There is also a suggestion that men put a higher importance on educational attainment because of its links to occupational careers and economic necessity, and consequently, they would be more likely to persist (Tinto, 1993).

Several studies have found that there were negligible direct effects of background characteristics on persistence (Bean, 1980; Pascarella & Terenzini, 1983; Braxton, Milem, & Sullivan, 2000). According to Stage (1989), the conflicting results are not surprising since most studies do not deal with homogenous samples, thereby masking the possible effects. In the cases where an attempt is made to control for these factors, it was often done using demographic variables (e.g., age, gender, ethnicity) as opposed to psycho-sociological ones such as level of motivation. The idea that colleges and universities can be homogenous to start with is a fallacy. They are invariably made up of many subgroups and subcultures. In fact, Tinto (1993) goes as far as to suggest that educational institutions are very much individual communities in and of themselves.

A student's ability, as demonstrated by previous academic performance, either through standardized tests or grades in previous studies, is an important predictor of persistence in

higher education (Sewell & Shah, 1967). Although some have suggested that high school grades serve as a good predictor (Chase, 1970), others have recommended that prior performance at an institution that most resembles a higher educational setting is more accurate (Astin, 1972).

It has also been suggested that a student's prior academic experience, including the interactions with and influence of educational professionals (i.e., high school teachers, guidance counsellors, administrators), helps establish the student's individual aspirations and expectations for future educational pursuits (Nelson, 1972). The "frog-pond" effect (Davis, 1966) also illustrates the influence of prior education. It stipulates that a student's expectations are negatively correlated with the ability of the student body surrounding them (Meyer, 1970). One's belief and confidence in one's own abilities, and consequently one's perceptions and motivation for future academic and professional goals, are influenced through these prior experiences. Therefore, students who excelled in an environment surrounded by weaker students would be more confident in their abilities (and chances of future success) than a strong student who did not "stand out" because of the relative academic strength of their peers.

Previous experience in an academic setting can also include the prior behaviours of the students before entering the post-secondary system. In a report on university and college leavers, Butlin (2000) found that students who had previously left high school (and returned and graduated), as well as those who had a history of skipping classes, were more likely to drop out of university. This report also found that students who had worked more than 20 hours a week while attending high school had a higher probability of abandoning their post-secondary studies.

Since Tinto's model reflects a transition phase, as inspired by Van Gennep's (1960) work on the rites of passage, a student's ability to adapt must be considered. According to Lavin (1965), dropouts are prone to be less flexible to changing environments than students who persist. This would imply that students must be willing and able to invest their energies to make the social and academic adjustments necessary to succeed in the new environment (Chickering & Reiser, 1993; Braxton et al., 2004).

In describing pre-entry attributes, Tinto (1975) also makes short mention of a student's ability to adapt to unfamiliar situations and stresses; however, no elaboration is made on how to measure this, or on the many studies that have been conducted in this field. A student's ability to cope and adapt can also be linked to individual skills that they may possess to ease the transition to higher education. Such skills could include information literacy, language skills, networking abilities, and other aptitudes that will enable them to identify and rectify problems on their own. Although there is no consensus with regards to the effects of a student's pre-entry characteristics on persistence (Tinto, 1993), the characteristics themselves are variables that are relatively easy to collect and have the potential to be statistically and practically significant in a given context, if the analysis is done properly.

## **2. Initial Goal and Institutional Commitment**

According to Tinto (1975), a student's individual characteristics help establish their initial goal commitments with regards to their education, as well as their dedication to the institution which they are attending. Therefore, an individual with low aspirations for their education will have lower commitment levels to achieving that goal. Similarly, if the student did not want to attend the particular school, it will be reflected by their low commitment levels to the school. This in turn will increase the chances that the learner will not attain their educational goals, especially at that school.

### **Goal Commitment**

For students entering a higher educational institution, educational goals can include the achievement of a given degree, success in a particular class, and/or entering into a particular profession. In general, it has been found that the higher the level of one's educational or occupational goals, the better the chance of completing college (Sewell & Shah, 1967; Spady, 1970). Tinto (1993) adds that this phenomenon was especially true in cases where a degree was needed in order to pursue a particular career (e.g., medicine or law). This fact was corroborated by Grayson and Grayson (2003) who found that the five-year attrition rate for students enrolled in fields such as fine and performing arts and science was double that of students in health

sciences and law. Spady (1970) claimed that once an individual's ability was controlled for, their commitment to the goal of college completion was the most influential predictor of retention and graduation from that educational institution.

As part of the longitudinal model proposed by Tinto (1975), personal attributes upon entering college have a direct effect on one's initial goal commitment. For example, a student who comes from a high socioeconomic background with parents who are highly educated and who have high expectations for their child, would likely have high initial educational and/or occupational goal commitments, and therefore, be less likely to voluntarily withdraw from college.

Although Tinto (1975) acknowledged the existence of a link between a student's pre-entry characteristics and the establishment of commitments to initial goals, he did not elaborate on how they are set. Goal commitment is influenced by a variety of factors that stem from an individual's expectations, their belief in their capabilities, and the motivation to achieve those goals (Astin, 1972). It is not clear if Tinto meant for goal commitment to be analogous to these factors.

### **Institutional Commitment**

Institutional commitment refers to the dispositional, financial, and time commitments that are made in order to attend a given educational institution (Tinto, 1975). Tinto (1993), referring to a student's entry characteristics, has suggested that peer pressure and family traditions may play an important role in one's initial commitment to an educational institution. Commitment to an institution is related to personal goals. It reflects an individual's willingness to attain said goals within the confines and structure of the educational institution in question.

Because the role of the institution on student persistence has been attributed such importance, it follows that the characteristics of the educational institution are as important. Tinto (1975) posits that many decisions to drop out seem to be the result of an individual's failure to establish an affiliation with the institution's social climate. Tinto's model was based on full-time

freshmen (first year students) in a residential four-year educational institution, but comparative retention studies based in other types of establishments and for other types of students were quick to follow.

For example, in a subsequent comparison between four-year and two-year academic institutions, the results implied that there was a higher dropout rate in two-year colleges (Astin, 1972). Some have suggested that this was because students who enrol in these schools have comparatively lower grades and lower motivation levels (Astin, 1972). Spady (1970) added that demographically, a higher proportion of students with a lower socioeconomic status attend two-year colleges, and therefore they would be more inclined to drop out. In analyzing Tinto's (1975) model, Braxton et al. (2000) suggested that external forces play a more important role in the departure decision for students attending commuter colleges, and that there is a greater need for these students to have the support of their external communities to persist in their studies.

According to Tinto (1975), not only do pre-entry variables help establish one's initial goals for future academic endeavours, but they also influence the commitment to a given educational institution. However, the complexity in the procedure that leads to the establishment of these goals is not very well elaborated by Tinto's model. In particular, the effects of a student's motivation (including self-efficacy and locus of control) as well as the different types of educational institutions that they can attend, make the explanation of the initial goal commitments a complex, and contextual one.

There seems to be a consensus that the greater one's commitment levels (goal and institutional), the higher the chances of retention, and that conversely, the lower one's commitment, the higher the chances of departure (Tinto, 1993). However, some have suggested that the level of institutional commitment is more important in predicting retention (Mallette & Cabrera, 1991), whereas others believe that achievement of personal goals, such as the commitment to graduate, carries more weight in the dropout decision (Cope & Hannah, 1975; Pascarella & Terenzini, 1979).

Nevertheless, the literature has acknowledged, for the most part, that when a student enters a given institution, they do so because of the influence of their personal goals, whatever they may be. Their pursuit to attain said goals is affected by their expectations, beliefs, and motivation to see them through.

### **3. Academic Integration**

Pascarella and Terenzini (1983) explained that since Tinto's model was based primarily on one's fit with the environment, it follows that academic and social integration play a primary role in the prediction of dropout behaviour. A student's academic integration involves primarily their academic performance, but it also includes their intellectual development through their interactions, over time, with the members of the educational institution (Tinto, 1975).

Several studies have singled out grades as the most important predictor of persistence in higher education (Astin, 1972; Mallette & Cabrera, 1991). This has been disputed by Pascarella and Terenzini (1979) who did not find differences between the GPAs of persisters and dropouts. In addition, one must be mindful of the fact that low grades lead to academic dismissal, which is not synonymous with the voluntary dropout behaviour that Tinto (1975) was attempting to explain with his model.

As a measurement of academic integration, Spady (1970) suggested that grades can be seen as an extrinsic reward for the student for the attainment of particular academic standards, as dictated by the educational system. On the other hand, one's intellectual development is a more intrinsic reward in that it reflects a student's personal and academic development (Spady, 1970). Using grades to measure the level of academic integration, is "both a reflection of the person's ability and of the institution's preference for particular styles of academic behaviour" (Tinto, 1975).



#### **4. Social Integration**

Social integration refers to the student's identification with the institution's culture (beliefs, values, and norms), likely through their involvement in extracurricular activities, and in mingling with their peers. It was suggested that students who drop out of higher education have lower levels of social integration than those who persist (Tinto, 1975). Rootman (1972) argued that it was one's feelings of "social fit" that were most important, but Spady (1971) believed that if students were able to develop any type of friendship, they were more likely to stay in school despite the feelings of a lack of "fit". This would explain why individuals that were considered "social deviants" could, and did succeed in higher education.

For that reason, Tinto (1975) argued that social integration does not necessarily involve one's feelings of "fitting in" with the institution as much as it does being able to establish some sort of congruency with a part of the larger social system (i.e., a subculture). It was therefore the lack of involvement with some sort of supportive structure that had the largest impact on the decision to voluntarily withdraw (Rootman, 1972).

The size of the educational institution may also play a role in a student's social integration; the larger the school, the greater the number and variety of communities. Conversely however, larger schools may also have a negative effect on the chances of non-academic contacts with faculty and staff due to increased class sizes (Tinto, 1993). This would be especially true with the courses taken pre-dominantly by freshmen.

Participation in extracurricular activities has been seen as an effective means to enhance social integration (Spady, 1971). A considerable amount of research has also been conducted on the positive effects of student interaction with faculty in increasing social integration and persistence in higher education (Spady, 1971, Pascarella & Terenzini, 1977). Tinto (1975) suggested that peer-group interactions were the primary source of social integration, whereas extracurricular activities and interaction with faculty played lesser roles in the process.

Social integration requires that an effort be made on the part of the individual, either in taking the necessary steps to get involved in an organization, or in carrying out exchanges with their peers. In his theory on involvement in higher education, Astin (1984) describes student involvement as the “amount of physical and psychological energy a student devotes to the academic experience”. If a student makes no attempt to get involved, for example, by not submitting their work or participating in class discussions, they are more likely to have lower levels of social integration (Berger & Milem, 1999).

### **Interaction of Academic and Social Integration**

Pascarella and Terenzini (1983) detected that academic integration had its strongest effect on persistence when social integration was low. The influence of academic integration decreased with increased levels of social integration, and this compensatory relationship also worked the other way around. So, despite low social involvement in school, a student who was doing well academically would not necessarily drop out. In fact, their academic performance alone may be enough to encourage them to stay (Tinto, 1975). However, as they became increasingly socially integrated, their academic performance was no longer the sole reason for their persistence, and its influence diminished. A similar interaction was found between goal commitment and institutional commitment (Pascarella & Terenzini, 1979).

Where a paucity of social integration on its own can lead to voluntary student withdrawal, Spady (1971) cautioned that too much social integration may impede academic performance (and integration), which can ultimately lead to academic dismissal. In other words, if a student's priorities shift excessively towards social activities, they run a higher risk of dropping out because of poor academic performance. Consequently, Tinto's model was geared toward explaining voluntary withdrawal from college, and not necessarily for predicting academic failure (Tinto, 1975). This suggests that various combinations of factors and experiences will influence student persistence (Stage, 1989).

## **5. Subsequent Goal and Institutional Commitment**

Since goal and institutional commitments appear at the beginning and at the end of Tinto's model, they serve as both an input, and a process. This implies that an individual's attributes and commitment levels can change over time, a concept that can only be explored in longitudinal studies.

Tinto's (1975) model proposes that an individual's initial goal and institutional commitments may be altered over time by their level of social and academic integration within the confines of the educational institution. Academic integration has a direct effect on subsequent goal commitments, whereas the institutional commitment depends on an individual's social integration.

Rootman's (1972) research on adults involved in social organizations suggested that it was the stress caused by feelings of a lack of fit with the institution that was at the root of voluntary withdrawal. For example, an individual may determine, through their interactions within the educational institution, that there was a lack of congruence with their personal values, objectives, and/or with the organizational behaviour of the school. Consequently, their commitment levels to that institution and to their own goals could be reduced, thereby increasing the chance of attrition (Tinto, 1975).

There was no consensus in studies that have attempted to apply this aspect of Tinto's model. Several have supported the claim that one's goal and institutional commitment levels at entry directly influenced their subsequent levels (Braxton, Sullivan, & Johnson, 1997). Others have questioned the need to have the goal and institutional commitment levels appear as both input and process (Bean, 1980). That being said, the inclusion of this measure in Tinto's model reminded researchers that not only can behaviours change, but the variables that are often considered static in retention studies (i.e., financial situation, commitment to graduate, etc...) can and will change over time as well.

## 6. Dropout Decision

According to the final stage of Tinto's model, an individual's decision to persist (or not) in their studies was influenced by one's goal and institutional commitment levels, as a consequence of their academic and social integration within the educational institution (Tinto, 1975).

Tinto (1975) turns to the field of economics to explain the student's ultimate decision. According to the cost-benefit analysis theory, individual decisions with regards to any form of activity can be analyzed in terms of the perceived costs and benefits of that activity relative to those perceived in alternative activities (Voorhees, 1985). With this in mind, the decision to withdraw from higher education would occur if the individual perceives that the benefits of persisting and completing their degree are outweighed by the costs of attending the institution (Tinto, 1975). Tinto (1993) adds that, based on this, the implication is that one's commitment levels will increase the closer the student is to the attainment of their goal. For example, a student who is one year away from graduation would be less likely to dropout than a freshman.

One of the strengths of a longitudinal model is that it allows researchers to look at time-sensitive factors. In the case of dropout, Tinto's (1975) model allows for variables to change over a period of time. This means that behaviours, attitudes, and commitment levels can be re-evaluated by the learners throughout the decision-making process. It is with the inclusion of pre- and post-entry commitment levels that Tinto (1975) puts forward the notion that there is a re-evaluation, and possible modification, of those commitment levels based on the perceived returns.

However, there is no mention of the amount of time that should elapse before a learner re-evaluates their position. How much time is needed in order for the student to have had a chance to become socially and academically integrated? Since Tinto's work is based on new students registered in a programme, this measure is typically taken at the end of the first year of study. Therefore, these studies would centre on the integration of freshmen students within one academic year. How would this apply to studies conducted during a semester and in individual

classes? When does the decision to drop out or stay in the course take place? How much time does each individual typically take to become socially and academically integrated?

Several studies have concluded that students are at the highest risk of attrition in their freshman year (Pantages & Creedon, 1978). This may be because it was a period of transition when students must make the necessary adjustments to adapt to their new environment, which causes the highest risk of attrition to occur in the very first semester (Tinto, 1993). However, this claim was based on research conducted with students who were attending traditional, residential, four-year institutions, and consequently, the initial feelings of isolation that accompanied individuals who were living away from home for the first time may have played a much more significant role in the transition process.

### **Criticisms of Tinto's Model**

Tinto's model has undergone several reviews and tests of its validity (Bean, 1980; Munro, 1981; Astin 1982). In some cases, especially in four-year residential universities, the predictive power of the major parts of the model has been validated (Pascarella & Terenzini, 1983). However, it is important to note that in the studies that supported Tinto's model, the explained variance was quite low, oftentimes not exceeding 30% (Bernard & Amunden, 1989). In the case of Munro's (1981) study, no significant effects were found for Tinto's main component of social interaction, and it was suggested that a learner's educational goals, coupled with that of their parents, was the major contributor to persistence in higher education. However, once again, the explained variance was an abysmal 14%.

In one of their many reviews of Tinto's model, Pascarella and Chapman (1983) found that there was very little evidence to suggest that background characteristics and initial commitment levels explained any of the variance in the dependent variable (the decision to drop out). They suggested that what happens after a student has started their college experience, namely their level of academic and social integration, was a more determining factor in the decision to persist in higher education (Pascarella & Chapman, 1983).

Considering the amount of research that has been done on retention, it is no surprise that at some point in time, “virtually every attribute of personality has been cited as being related to the likelihood of departure” (Tinto, 1993). With the exception of commitment (institutional and goal) or motivation, there is little evidence to support the notion that dropouts have a unique personality profile (Tinto, 1993).

In an application of Tinto’s model to freshmen students at large residential colleges in the United States, Terenzini and Pascarella (1980) found that academic and social integration were more useful in predicting retention than individual differences and entry characteristics. They identified student grades as the most influential predictor of student persistence, and since the students primarily lived on campus, social integration was significant, likely because of the many opportunities that students had to do so (Pascarella & Terenzini, 1983). Of course, in making this claim, this refuted their previous study in which they did not find significant differences between the GPAs of students who persisted and those who dropped out (Pascarella & Terenzini, 1979).

Some researchers were quick to point to the limited applicability of Tinto’s model. This position was based either on their attempts to employ it in their context, or because of its theoretical underpinnings (Bean, 1980). Its major flaw was the fact that the model was based primarily on a given type of student (full-time freshman) in a given type of environment (classroom), in a given type of institution (residential university in the United States), over a given period of time (four-year programme). Consequently, some researchers suggested that it may fail to “capture the full complexity of the phenomenon” of retention (Pascarella & Chapman, 1983).

There have been additional criticisms about Tinto’s model because it did not make use of the direct experiences of college students as its basis to explain their departure, opting instead to build on the research on suicidal behaviour in society. The idea of “normative congruence”, as suggested by Durkheim (1951), should not and cannot be considered analogous to the experiences of students within an educational institution (Attinasi, 1992).

Mallette and Cabrera (1991) suggest that the mixed results in the application of Tinto's model could be attributed to having wrongfully grouped all of the students who withdrew from their programme of study under the same dropout umbrella. In other words, there is no differentiation between a student who withdraws for academic reasons, who transfers to another programme or to another school, or who postpones their studies. Subsequently, in many cases, there was no isolation of voluntary dropouts, which is what Tinto's model was designed to explain (Mallette & Cabrera, 1991).

Another common complaint about Tinto's model was that it failed to account for the potentially large impact that external factors played on one's persistence in higher education (Yorke, 1999). Although there was no mention of it in the model per se, Tinto (1975) suggested that the effects of external forces can be included in the cost-benefit analysis by the students' changing commitments. But Yorke (1999) argued that Tinto's theory had relatively little to say about the impact of external factors in shaping students' perceptions, commitments, and reactions, which he felt were important determinants. This was another reason that some researchers believed Tinto's model was in need of "serious revision" (Braxton et al., 1997).

However, Tinto (1993) cautioned that the Interactionalist Model of Student Persistence was a construct that attempted to explain the process that leads to attrition and that it was not a "systems model of departure". But in response to criticisms about his model, Tinto admitted that modifications were necessary if it was to be applied to a non-traditional setting with non-traditional students (Tinto, 1982). In response to this, Tinto (1993) put added emphasis of the effect of external communities, such as family or employment, and one's commitment to them, on the decision to drop out.

Despite its shortcomings, Tinto's (1975) model remains one of the most cited and influential studies on retention, sometimes referred to as "paradigmatic" and as a "foundational study" in the field (Braxton et al., 2004). Pascarella and Terenzini (1983) summarized its role in retention research by stating that the model "is an important contribution to our understanding of the

attrition phenomenon, rather than simply an algorithm for predicting it". The model was considered a major contribution because of its portrayal of the longitudinal process that leads to the dropout decision, as opposed to an attempt to simply predict the behaviour based on individual characteristics (Pascarella & Terenzini, 1983). The notion that the decision to drop out was mainly based on a person-environment fit was generally supported, but its main weakness remained its limited applicability since it was built for a specific type of student in a given environment.

Because of this, several researchers have attempted to create their own model of retention, usually by using Tinto's (1975) as a blueprint (i.e., Bean, 1980; Pascarella & Terenzini, 2005). With a few exceptions, these models were based on the same foundational research that was used by Tinto and the person-environment within the educational institution's structure. One of those few exceptions was a model created by Bean (1980).

### ***Bean's Organizational Model of Student Persistence***

Bean (1980) argued that by basing their research on Durkheim's theory of suicide (Durkheim, 1951), models by Spady (1970) and Tinto (1975) are inherently flawed because there was a lack of evidence linking a student's decision to drop out of school to that of taking one's own life. According to Bean (1980), previous research in retention ignored major bodies of literature. Therefore, they were not all-inclusive and they did not distinguish between the determinants of student attrition and their correlates. Furthermore, the analytical technique used in the construction of previous retention models (path analysis) was inappropriately based on the definitions of the variables involved (Bean, 1980).

But despite the flaws that he pointed out in Tinto's (1975) model, Bean did use it as a foundation for the construction of his own. However, instead of using Durkheim's work as a theoretical basis, Bean (1980) turned his attention to the work of Price (1977) and his study of turnover in work organizations, which he believed to be a more appropriate groundwork to explain similar behaviour amongst students.



In constructing the model, Bean (1980) identified three types of independent variables that could potentially affect one's retention. These variables are classified as: satisfaction and institutional commitment, organizational determinants, and background. The first set of variables dealt with the degree to which a student was satisfied with being a student, as well as their loyalty to the educational institution. The organizational determinant variables introduced measurements from the employee retention model. The background variables included measures for past academic achievement, socio-economic status, hometown size, and the distance between their hometown and the educational institution.

Bean's (1980) model included several determinants borrowed from the employee retention literature such as:

- "routinization" – the degree to which the role of being a student is viewed as being repetitive,
- "opportunity" – to transfer, change school or programme,
- pay surrogate measures – "development", "university GPA", "practical value", and "institutional quality", along with "satisfaction".

Bean argued that the presence of variables serving as pay substitutes in education in the final model, validate the link between student attrition and employee turnover (Bean, 1980). But the primary variable that predicted retention in Bean's model was institutional commitment, which was consistent with the findings of studies by Spady (1970) and Tinto (1975).

As far as "practical" implications for educational administrators were concerned, Bean (1980) suggested admitting students with the highest high school GPAs, as well as advising staff that men and women leave school for different reasons. Ultimately, Bean's model had limited applicability. It failed to account for 80% of variance with women, and 90% with men. In addition, the subjects used in this study were all under 22 years of age, Caucasian, U.S. citizens, single, in their first semester of study (freshmen), and full-time students. Moreover, the sample turned out to be biased towards higher ability students (Bean, 1980).

In a follow-up study, also with college freshmen, Bean (1982) built on his previous model by introducing an independent variable that measured a student's intention of leaving. This was based on the work of Fishbein and Ajzen (1975) who proposed the attitude-intent-behaviour causal sequence, where the attitudes and behaviours exhibited in the past, act through one's intentions to elicit future behaviours. It was found that a student's expectations of returning to the school (in their programme) in the near future were negatively correlated with dropping out (Bean, 1982). Unfortunately, since one's intent to leave does not provide additional information as to the reasons leading to that decision (e.g., transfer to another school, financial problems, unsatisfied with programme), this study had limited use for educational administrators.

Cabrera, Castaneda, Nora, and Hengstler (1993) have determined that an integrated retention model combining Tinto's (1975) model with Bean's (1980) offers a more comprehensive understanding of the individual factors which contribute to attrition. In other words, it was found that the retention models were complementary to each other, as opposed to mutually exclusive.

Braxton and Brier (1989) also based their retention research on the impact of the organizational structure of an educational institution. They found that not only did the decisions of the school administration have an effect on its employees (staff and faculty), but there was a trickle-down effect on students as well. Tinto (1993) suggested that this finding would have a greater impact on policy-makers seeking to increase institutional effectiveness, or on researchers comparing retention between different schools, but that it does not help in comprehending how these organizational attributes ultimately affect student dropout.

Berger and Braxton (1998) have since suggested that organizational attributes such as institutional communication, fairness in policy and rule enforcement, and the student's participation in decision making, all influence the degree to which a student becomes socially integrated within the institution. In other words, students were more likely to persist if the institution has aided them in setting unambiguous and realistic expectations about their

experience within the educational institution. They suggest that this elaborates on Tinto's (1975) original theory by adding weight to the role the educational organization plays in aiding one's social integration, and in doing so, affecting retention (Berger & Braxton, 1998). This would apply, as always, to the retention of freshmen students in their program of study.

Despite the fact that organizational theories of retention put more emphasis on the role of the environment on the decision to withdraw, they underestimate the role that interactions with members of the educational community (i.e., student-faculty, student-student) have in shaping student behaviours (Tinto, 1993). Curiously, this was not the case in studies conducted in other educational settings, such as high schools. There, the effects of social interaction within the educational institution have been proven to be linked to student behaviours (Chase, 1970). Nonetheless, Tinto (1993) suggested that models grounded in organizational theories, despite the low explanatory power, remind researchers in retention of the importance of the organization of educational institutions on student attrition.

### ***Additional Research***

Although longitudinal retention models provide a methodology to investigate the effects of a variety of independent variables concurrently, other researchers have preferred a more focused approach. The emphasis in these studies was put on isolating and examining specific non-demographic variables (some from Tinto's model) and their contributions to the student's decision to persist in their studies. The following section presents some of the variables that have garnered much of this attention and that have resurfaced in retention studies in distance education settings.

#### **Motivation**

Motivation can be defined as an individual's desire to pursue a goal or perform a task (Keller & Litchfield, 2002). The impact of motivation in educational settings has been the focus of a wide range of research and is instrumental in several learning theories, such as Gagne's (1985)

“Conditions of Learning and Theory of Instruction” and Skinner’s (1974) “Reinforcement of Learning Theory”.

The investigation of student persistence has also spawned research using a myriad of motivation-related variables. These theories and variables have included McClelland’s (1961) need for achievement, Rotter’s (1966) locus of control, Deci’s (1975) effects of intrinsic and extrinsic motivation, and Bandura’s (1977) self-efficacy theory.

Motivation can also be used as a covariate to investigate subgroups of learners. For example, Stage (1989) isolated learners who fell into three distinct categories based on their motivation for undertaking their studies: certification (getting a degree or job), cognitive (pursuit of knowledge, sake of learning), and community (to learn how to help others). It was found that students who were undertaking studies motivated by certification had higher initial levels of institutional commitment the higher the educational background of their mother. Furthermore, higher initial commitment levels were found amongst older community-motivated learners (Stage, 1989).

All three groups (certification, cognitive, and community) demonstrated a positive relationship between initial commitment to the institution and social integration. Certification and cognitively-motivated learners showed evidence that their background characteristics were related to their academic integration (Stage, 1989). One could argue that goal commitment, as suggested in Tinto’s (1975) model, is a form of intrinsic motivation (obtaining a university degree), and that similarly, academic integration (achievement of grades) can reflect one’s external motivation.

### **Self-Efficacy**

One of the pre-entry characteristics mentioned by Tinto (1975) was the student’s ability to adapt to a given situation. However, there was no mention of how to measure this variable, or exactly what it entails. Bean and Eaton (2000) suggested that students with high self-efficacy are

more confident in their ability to make necessary adjustments, and therefore are more prone to survive the educational experience. Self-efficacy, as proposed by Bandura (1977) in his "Social Cognitive Theory", refers to an individual's belief in their capabilities to achieve a particular outcome. Self-efficacy can be influenced by one's personal experience, the experience of others (vicarious experiences), social persuasions (e.g., encouragements), and physiological factors (e.g., stress, health).

The concept of self-efficacy also plays a significant role in the third stage of Keller's (1979) ARCS model. Keller (1987) argued that all individuals will be motivated to achieve a goal if they have a positive expectancy of success and that goal has a positive value for them. This expectancy-value framework was used to isolate the four main characteristics of human motivation: attention, relevance, confidence, and satisfaction, better known as the ARCS model (Keller, 1979). This model has been used as a theoretical and practical framework in persistence studies by Chyung (2001) and by Visser, Plomp, Amirault, and Kuiper (2002).

Confident people believe that they have the ability to accomplish a goal and Keller (1987) warns that the fear of failure is often much stronger for students than instructors realize. This has implications for persistence in that students who are not confident in their abilities (low self-efficacy), and who consequently experience a decrease in their motivation to put their efforts into the course, are more inclined to drop out.

### **Locus of Control**

Where self-efficacy essentially refers to one's confidence in one's own abilities, individuals who perceive that outcomes are the direct result of their own behaviours and actions are said to have a high (or internal) locus of control. In other words, feelings of an internal locus of control are akin to perceptions of controlling one's own destiny. On the other hand, a low (or external) locus of control would characterize an individual who believed that outcomes were the result of fate, luck, chance, and the actions of others (Rotter, 1966).

Research has shown that an individual who is reinforced by personal accomplishments shifts towards an internal locus of control as opposed to reinforcements that are inconsistent and sporadic (Rotter, 1966). Bers (1986) explains that students with an internal locus of control feel as if they have a direct influence on events based on their own actions, and thus, are more likely to persist in higher education. On the other hand, students who have an external locus of control are more likely to drop out in times of stress since they feel powerless to improve their situation.

### **Satisfaction**

Studies on the effects of satisfaction in higher education have revolved around two particular issues that affect retention. There has been some support for the relationship between satisfaction levels and academic integration (Borden, 1995). More specifically, high satisfaction levels have been linked with increased academic achievement. High academic achievement, in turn, has been associated with better retention rates in educational programmes (Walker-Marshall & Hudson, 1999). Suhre, Jansen, and Harskamp (2006) suggested that in order to prevent dissatisfaction, one would need to investigate its causes. In their study with law students in the Netherlands, they concluded that learner satisfaction levels are associated with congruence to their initial expectations pertaining to the content, as well as to their expected study behaviour.

According to Keller (1987) lower satisfaction levels will also reduce a student's motivation levels, adding that the most effective type of satisfaction is intrinsic. Malone (1981) argued that a student who is motivated to learn for intrinsic reasons will tend to spend more time and effort doing so, feel better about what they have learned, and use that knowledge more frequently in the future. Indeed, Richardson and Swan (2003) found that students who were satisfied with their instructor were more likely to perceive that they were learning, thereby raising their intrinsic motivation.

## ***Summary of Early Retention Research***

There is no universally accepted model or theory that is able to properly explain the retention phenomenon (Braxton et al., 2004). The models that have been proposed thus far have limited usefulness when generalizing and their predictive power can be described as weak at best. Attempts to validate, modify, adopt, and tweak existing models have produced a smorgasbord of frameworks that cater to a variety of students in a multitude of educational settings. Yet, applying these models to other settings, and the results of their replication, has generally not fared any better than their predecessors.

This could be explained by the fact that the majority of models share an important point in common in that they are all heavily inspired by Tinto's (1975) original model. It is possible that the low predictive power of the original model is the root cause of the lack of explanatory power in subsequent research. Perhaps it is time for researchers to look at new fields, theories, and *models for inspiration in further retention studies*. An interesting example of this is a novel study conducted by McLaughlin, Brozovsky, and McLaughlin (1998) who associated the process leading to one's decision to drop out of school with the stages of grief in death and dying (denial, hostility, bargaining, depression, and acceptance).

Despite this lack of applicable frameworks, much can be learned from the older research on retention. It can be used to guide and inform future forays in the explanation of the phenomenon. For example, although Tinto's (1975) model has proven to have low predictive power, it nevertheless introduces the concept of a longitudinal methodology for measuring retention. In employing this methodology, one acknowledges the fact that the individual measurements can and will vary over time. It also reinforces the notion that, at the end of the day, the dropout decision is far from instantaneous. Rather, it is the result of a series of internal and external factors, interactions, and experiences encountered by the student over a period of time.

Individual variables, such as personal characteristics, commitment levels, and educational goals, as well as social and academic integration, have been shown to have varying effects on attrition. Where the gaps were identified in Tinto's (1975) model, subsequent work ascribed more prominence to the effect of external stresses, as well as the attributes of the institution itself, on the student's decision to remain in school.

One of the major omissions in previous research on retention was a failure to identify the characteristics of students who have dropped out. If there was no comparison between students who have dropped out and those who have persisted, conclusions could have only limited validity (Pantages & Creedon, 1978). One cannot make legitimate inferences about the reasons why a student has decided to withdraw uniquely from the analysis of data collected from those who persisted. As the population of interest in these studies, obtaining data directly from students who dropped out is critical.

Furthermore, as was acknowledged by the use of a longitudinal model in previous studies, the student's environment, experiences, and behaviour change over time. Similarly, time also has an effect on the educational institution. The teaching philosophy may have changed, the instructional techniques and practices may have evolved, the technology may have been upgraded, and the student body may have evolved. Subsequently, retention models conceived in the past may not be pertinent in the present day, even if the academic environment is similar.

There are also problems with trying to generalize the results from one study based on a particular situation and applying them to other situations, simply because each institution presents its own unique context. Each university campus represents a new environment for the researcher since an institution's characteristics are as diverse as the students who attend it. Consequently, understanding who is leaving and why they are leaving will also vary by institution (Grayson & Grayson, 2003).



Moreover, due to the very limited amount of research that has been conducted on attrition specific to Canadian educational institutions the majority of the studies there were investigated were based in post-secondary institutions in the United States. One must therefore be conscious of the possible confounders when the results from these studies are “applied uncritically to the Canadian context” (Grayson & Grayson, 2003). For instance, in their report on the state of retention research in Canada, Grayson and Grayson (2003) point out that post-secondary institutions in the United States have significantly more residential colleges, have a broader variance and range in their fee structure, have more private educational institutions, and have a different racial composition among its population of students. In addition to the differences between the American and Canadian educational structures, one must also consider the unique features of the post-secondary system in the province of Québec (e.g., the CEGEP system, the fee structure).

### ***The Evolution of Retention Research***

The following section investigates the second generation of research on retention in higher education. Although Tinto’s (1975) model is still highly regarded as a seminal work in the field, researchers have been quick to point out its many flaws, and have conducted their own research in a quest to better predict and/or explain the attrition phenomenon in their own unique contexts.

The increasing diversity of the student population in higher education institutions was at the root of the shift in research on retention. It has become increasingly obvious to educational administrators, professionals, and researchers that the typical freshman entering their educational institutions is no longer cast from the same mould that was once deemed ‘typical’. Previous studies on students enrolled in higher education, especially in the United States, assumed that most new students in higher education were Caucasians in their late teens that were enrolled full-time in a four-year programme. They lived on campus, and/or had limited responsibilities outside of their studies (i.e., families, jobs, etc...).

However, demographic studies have shown that not only has enrolment steadily increased over the past few decades, but that there have been significant changes in the characteristics of the learners (Horn & Premo, 1995; Horn, Berger, & Carroll, 2004). For example, part-time attendance in United States colleges doubled between 1970 and 1990 to 42% of total post-secondary enrolment at that time (Horn & Premo, 1995). This trend influenced the average age of U.S. college students. There was a statistically significant increase in the 19-year-old and 20 to 29-year-old age groups, as well as a decrease in the percentage of 18-year-olds between 1989 and 1995 (Horn et al., 2004).

These trends alerted researchers to the fact that the “archetype” of the college student was shifting due to an increase in the proportion of “non-traditional” students enrolled in postsecondary programmes. These students represented a demographic whose values and needs may not necessarily reflect what had traditionally been associated with the “typical” college student. Consequently, research on the “non-traditional” educational market flourished. Not only were these studies conducted in an attempt to better understand learners who were not considered the archetypal college student, but in doing so, previous retention models could be retrofitted to better represent the current situation.

In Canada, the overall participation rate in post-secondary institutions has also been rising as record numbers continue to be reached. This increase has been mainly attributed to the ongoing growth in foreign students coming to Canada and higher participation rates among young adults (18-24 year-olds), especially females and visible minorities (Shaienks & Gluszynski, 2007; Statistics Canada, 2008). Between 2000 and 2006, full-time enrolment in Canadian universities increased by 31%, and this figure is expected to grow by between 9 and 18% from 2006 to 2016, due mainly to the effects of the echo of the baby boom generation (AUCC, 2007).

However, the AUCC (2007) cautions that the “demography and the factors affecting university participation rates will play out differently for individual universities, and the drivers of change for enrolment will exert different pressures in different regions”. The AUCC predicts that the

factors that will affect the demography of the participation rates in higher education in Canada will include urban youth, immigration and international students, parental influence, socio-economic status, labour market demands, graduate education demands, the financial returns of a university education, and the affordability of post-secondary education.

Although part-time enrolment at Canadian universities increased by 65% between 1976 and 1992, participation levels among this group of students dropped by 1997 and have remained relatively stable ever since. In fact, it was suggested that the increase in the proportion of part-time university enrolment by students who are 25 years-old and over may be more a function of the growth in the overall population of that age group (Hango & de Broucker, 2007; AUCC, 2007). However, there is no denying the fact that there is an increased presence of part-time students on Canadian university campuses, of which 69% are 25-years-old or older (AUCC, 2007).

The following section will explore the non-traditional student as the clientele that was at the genesis of the rise in popularity of alternative forms of education, namely distance education. It was the identification of the unique needs and demands of these students that ultimately catalyzed the rise in distance learning opportunities.

### **Non-Traditional Students**

The demographical shift in higher education was not lost on retention researchers. They identified the need to diversify the scope of their studies to focus on particular populations. It was evident that the results of previous retention research had limited applicability since it could not serve as an overall model to explain student behaviours in every educational and demographic context. As a result, researchers began to explore retention within diverse learning environments that involved students with particular characteristics. This included studies on the retention patterns of “non-traditional students” in general (Bean & Metzner, 1985), students in commuter and two-year colleges (Pascarella & Chapman, 1983), and students enrolled on a part-time basis (Metzner & Bean, 1987).

Bean and Metzner's (1985) study on non-traditional students, described these learners as older (over the age of 24), and as having family and work responsibilities. Consequently, they were frequently enrolled as part-time learners. These students typically lived away from the campus (they were commuters), belonged to a social group that was not associated with the educational institution, and had dependents (Rovai, 2003).

Several studies have demonstrated that part-time students were more likely to drop out of their programme than full-time learners (Okun, Benin, & Williams, 1996; Gilbert, 1991). One explanation offered for this trend uses investment theory, which proposes that a student who has less invested into the organization (e.g., taking fewer courses) was more likely to leave the organization (Okun et al., 1996). However, the fact that these students were not committed to taking on a full course load could mean that they were less interested in completing an entire programme to begin with. Besides, it does not necessarily follow that a full-time student would be more committed to completing a particular course than a part-time student.

Pascarella and Chapman (1983) discovered additional differences between students in residential universities and those in commuter colleges. For instance, in residential settings, institutional commitment was more important than goal commitment, and social integration had greater influence than academic integration on student retention. However, in the case of commuter colleges, academic integration played a greater role in attrition than social integration (Pascarella & Chapman, 1983; Braxton et al., 1997).

The reduced importance ascribed to social integration and institutional commitment in the case of commuter students could be attributed to the fact that they spend much less time on campus than residential students, and therefore, do not have the same opportunities to become integrated (Sweet, 1986; Tinto, 1993). In addition, their choosing of a particular educational institution may be more a matter of convenience, such as the proximity to their residence (Pascarella & Chapman, 1983).

The disparity between residential and commuter institutions is very much a reflection of the differences in their clientele. Non-traditional students typically opt for the more flexible and convenient commuter colleges to pursue their education. However, Bean and Metzner (1985) caution that these institutions are attended by both non-traditional and traditional students. Therefore, Tinto's (1975) model fails to adequately address student departure in commuter universities. According to Braxton et al. (1997), the only portion of Tinto's model that seems to be applicable is the influence of the student's entry characteristics on their initial institutional commitment, which in turn affects their subsequent commitment to the school.

Tinto (1993) points out that commuter students attend campus to do the basic things that are needed to complete their degree requirements (attend class, hand-in work, meet with group members, etc...). Braxton et al. (2004) add that this is accentuated in urban settings where students come and go throughout the day, oftentimes hurrying to and from the campus in order to meet their educational, family, and work commitments. In doing so, commuter students spend very little extracurricular time on campus, often to the detriment of interactions with other students. Consequently this contributes to feelings of isolation and disconnectedness. As Braxton et al. (2004) put it: their experiences are reflected in "the well-worn paths between the parking lot and the classrooms". Accordingly, these commuter students, lacking the social structure that on-campus students are able to forge, need an increased sense of self-efficacy and motivation, a sense that their efforts will result in the attainment of their educational goals (Braxton et al., 2004).

The transformation of the student body enrolling in higher education not only meant increased attendance in the schools, but it also introduced a clientele that demanded alternate forms of education to meet their unique needs and situations. As a result, these "non-traditional" students would become the first to embrace educational opportunities that catered to their schedule, and did not require their on-campus presence.

## **Distance Education**

If the change in demographics of the student population in higher education necessitated new studies because of their diverse characteristics and educational settings, distance education introduced an added challenge in that the academic environment shifted entirely “off-campus”. Once again, students taking advantage of distance education opportunities were not the “archetype” that researchers were used to in more traditional settings, and accordingly, their needs, expectations, and motivations differed (Palloff & Pratt, 2001).

According to Keegan (1996), distance education students tend to be older, are employed, are returning to school, and live further away from the educational institution than traditional students (are commuters). It is these same learners that have pushed for more flexible learning opportunities so that they can further their education without compromising their other responsibilities. In studying retention in a distance learning environment, Kember (1989) argued that individuals who were most interested in these types of learning opportunities were non-traditional students.

Moore and Thompson (1990) define distance education as planned learning that occurs in a place and at a time that is different from that of the instructor(s). Although the physical separation is a key factor of distance education, Garrison (1987) proposes that it is the communication process between the instructor and the learner that should be the focal point of distance education research.

Keegan (1996) proposes that distance education consists of any type of instruction where:

- The learner is physically separated from both the teacher and the learning group, at least quasi-permanently during the learning process. This is unlike classroom-based teaching.
- The instruction is offered under the guidance of an educational institution so that course materials are validated and students are provided with the necessary support services. This differentiates it from home study.

- Technical media is used to deliver the content, as well as to unite the instructor and the learners.
- Two-way communication strategies are used. This distinguishes it from other forms of educational technology.

Distance education is by no means a new phenomenon. One could argue that Plato's publication of Socrates' Dialogues in 360 B.C. is the first example of using the technology of the time to promote education. Another example could be the writings of the apostles that were used to promote and teach Christianity, still used to this day. But it was the invention of the printing press and the implementation of a universal postal service that catalyzed the movement to bring education to one's home or workplace, thereby personalizing the learning experience and allowing for flexible timetables (Daniel, 1996).

Since they became mainstream and affordable to the population, media technologies such as the radio and television have been used in distance education contexts by higher education institutions. Daniel (1996) identified the four technology groupings that have had the most influence on distance education as:

1. The combination of print and post (correspondence education),
2. The mass media of broadcasting,
3. Personal media,
4. Telecommunication systems.

Fuelled by these technologies, the popularity and acceptance of distance education grew to the point where, not only was it possible to earn complete degrees in this manner, but educational institutions, such as the United Kingdom's Open University (1969), New York State's Empire State College in the United States (1971), and Canada's Athabasca University (1970) and Télé-université (1972), were founded to cater uniquely to students wanting to take advantage of distance education opportunities.

## **Retention in Distance Education**

The following section examines retention specific to distance education settings, beginning with its earliest forms (i.e., correspondence study), before focusing on online environments. Due to the relatively recent rise of online courses, there is a dearth of retention research in the field. For the most part, the few retention studies specific to online courses that have been carried out are limited to case studies involving a particular class or group, studies set in a business setting, or extrapolations of research conducted in distance education settings in general.

Consequently, research in this field resembles the state of research prior to the development of the Tinto (1975) model in classroom-based instruction. That is, retention research in online learning has mainly borrowed from, and been inspired by, previous theories and models in distance education. Not surprisingly, the original retention model by Tinto (1975), despite being over 30 years old and based on students in the traditional classroom, has served as a guide for many studies in distance and online retention. It should be noted that due to the scarcity of research specific to retention in asynchronous undergraduate online courses, this review will include variables isolated from studies in a variety of Web-based settings.

Despite the availability of alternate modes of delivery, correspondence courses represented the dominant type of early distance education offered by educational institutions, likely because of their low production costs and their ability to reach a maximal amount of learners. Consequently, early research on dropout in distance education revolved around the behaviour of learners in correspondence courses (Garrison, 1987).

Garrison (1987) characterizes correspondence education as being an “individual and independent method of study” that takes place anywhere and at anytime, as controlled by the learner. However, he points out that despite this “pure” form of education, it has also produced dismal attrition rates varying between 30% and 70%. This being said, due to the inconsistent



definitions and methods of calculating attrition, these statistics should not be used without some additional information.

Rekkedal (1985) suggested that the study of the dropout phenomenon has been given the highest priority amongst distance education researchers in an attempt to validate the medium of instruction as a viable one. However, this does not mean that the number of studies on the subject is abundant, as pointed out by Simpson (2003), who claimed that there is a shortage in retention research specific to distance and online education.

According to Morgan and Tam (1999), there have traditionally been three approaches to the study of retention in distance education:

1. Students are classified according to certain characteristics in an attempt to find out which are more likely to drop out. (e.g., Belawati, 1998).
2. Courses that have high and low drop-out rates are isolated in an effort to determine their differentiating features (e.g., Woodley & Parlett, 1983).
3. The students themselves are asked why they dropped out (e.g., Garland, 1993; Morgan & Tam, 1999).

Based on the research conducted up to that point in time, Powell, Conway, and Ross (1990) identified three categories representing the variables that contribute to retention in distance education. The first category dealt with the learners' pre-entry characteristics when enrolling in the course. This can include their socioeconomic status, their educational background, and their attitudes. The second category was labelled "life changes" and takes into account factors such as unexpected illnesses, altered employment status, and non-academic commitments. The third category, called "institutional" variables, encompassed factors that are directly influenced by the school. This would include the quality and difficulty of the course materials, the quality of the support services, and the competency of the teaching team. Ultimately, Powell et al. (1990) concluded that the predisposing characteristics of the learner have the greatest influence on their decision to persist in their academic pursuits.

Upon concluding that there lacked a conceptual model of dropout in distance education, Kember (1989) proposed his own longitudinal solution based on the assumption that distance learners are of the “non-traditional” variety. He subsequently modified Tinto’s (1975) model for the purposes of distance education. Background variables were expanded to include measures for the effects of family life and employment, both of which play a more significant role with non-traditional students (Kember, 1989). The proposed model also downplayed the role of goal and institutional commitment for the non-traditional student. This was done in accordance with criticisms of Tinto’s (1975) original model by Bean (1980) where these measures appeared as both input and process.

Although Kember (1989) did not predict a direct link between student characteristics and attrition, background variables were included in the model. In addition, the indirect effects that gender, age, previous education, experience, and previous performance had on attrition were also included (Kember, 1989). Intrinsic and extrinsic motivation was considered a major contributor to goal commitment in this model, with added emphasis on intrinsic motivation. This is based on Knowles’ (1983) research on the role of intrinsic motivation in adult education. The most significant difference in the Kember model was the inclusion of a cost-benefit analysis precluding the decision to drop out, the feedback loop that restarts the decision-making sequence, and the fact that the model was focused on individual course attrition rather than on dropping out of a programme of study.

Building on the concept introduced in economics-based models of retention by Jensen (1981) and Voorhees (1985), Kember (1989) describes the cost-benefit analysis stage as one where “the student has to decide whether the opportunity costs of time spent studying are worthwhile in view of the perceived benefits of the eventual qualification or other benefits the student might derive from studying”. Since a learner’s characteristics will not remain stable over the course of their academic career, goal commitments, as well as the degree of social and academic integration, will be affected. This will cause students to reassess their situation on multiple

occasions. Therefore, there was a need to include a “recycling loop” in the model to reflect this reassessment.

However, Kember (1989) admitted that his model was hypothetical and that needed to be tested. Since this has yet to occur, its applicability and validity is relatively unknown. He also added that the type of distance education program within an institution will alter the nature of the variables measured, but no further information was given on this. In addition, although he acknowledged the difference between the models that inspired his own, there was little explanation as to how studies based on full-time students enrolled in classroom-based programmes can be applied to part-time non-traditional learners (adult learners in this case) enrolled in distance education courses. Despite this, Kember (1989) suggests that his model can be useful “...as a theoretical framework to aid in the interpretation of findings and to predict interventions to reduce dropout”.

The popularity of distance education courses with more mature clientele often resulted in early retention research seeming to be an extension of studies in adult education. However, basing research in one field on theories developed in others may result in concepts and theories that are not applicable to the situation under study (Garrison, 1987).

As was the case with research on other subsets of learners, retention models and theories originally developed with traditional learners were used as a basis for studies in distance education. Few studies have attempted to create models for the express purpose of retaining distance education students (Kember, 1989). Since it has been claimed that Tinto’s (1975) model has been the most cited of all retention studies (Simpson, 2003), and due to the fact that validation studies of the model have concluded that it is perhaps the best suited to explain the behaviours of non-traditional learners (Yorke, 1999), the model has oftentimes been used as a starting point for studies in distance education retention.

Backed by its empirical support in the literature, Sweet (1986) selected Tinto's (1975) model as a basis for adaptation in a distance education setting involving adult learners in British Columbia, Canada. Despite previous research suggesting that the effects of social integration in Tinto's model would be minimal with non-traditional students, Sweet found that telephone contact between teachers and students had a positive effect on persistence. Furthermore, he concluded that Tinto's model provided a suitable framework to study retention in distance education, although the overall model was only able to explain 32% of the variance (Sweet, 1986). Kember (1989) criticized Sweet's study because of a failure to alter Tinto's model to suit the type of learners involved, despite the fact that Tinto (1982) himself had admitted that his model should be modified if it was to be applied to non-traditional learners.

### ***Retention in Online Courses***

Most studies conducted in distance education settings, at least until recently, have revolved around courses where the mode of delivery included study guides (correspondence courses), television, audio-conferencing, and computer-assisted instruction. As computers have become increasingly affordable and dial-up Internet connections have gradually made way for broadband connections in the household, courses offered entirely via the World Wide Web have increased in popularity (Allen & Seaman, 2007).

Carliner (2004) defines online learning as any educational material that is presented in an online environment, whereas Khan (1997) stipulates that it is an approach that delivers instruction to a remote audience using the Web as the delivery medium. Anderson (2008) points out that online learning is akin to any other formal educational environment in that the learner's needs are assessed, there is a prescription of content, instructional activities are experienced, and learning is evaluated. However, the medium of delivery adds the capability of shifting the time and place of that instruction, offers the content in a variety of formats, allows for instant access to an infinite wealth of additional information via the Internet, and takes advantage of multiple forms of computer-mediated communication.

Although online courses are a genuine form of distance education, they introduce opportunities and potential barriers that differ from their predecessors. The technology is dynamic and allows for the creation of rich multimedia environments, and the communication protocols may involve chat rooms, e-mail, discussion boards, and webcams. Ally (2004) adds that an online learner benefits from the removal of barriers caused by time zones (in asynchronous courses), location, and distance. Instructors who make use of this medium can tutor students at any time and from anywhere, and if the learning system is properly designed, it can help determine a learner's unique needs, thereby personalizing the instructional experience.

One of the major weaknesses of correspondence study (and other forms of asynchronous distance education), is the lack of and/or delay in interaction. One solution implemented to curtail this problem was the inclusion of face-to-face tutorials. However, this undermined two main advantages of distance education: economies of scale and flexibility of studying anytime and at any place (Daniel & Marquis, 1979). The use of computer-mediated communication was a popular way to alleviate this issue as it allowed for both synchronous (chat rooms) and asynchronous (e-mail, discussion boards) interaction, not only with the instructor, but also with fellow classmates.

That being said, courses offered online have much in common with other forms of distance education, and therefore studies on older modes of delivery can provide useful information that may be transferred to more modern settings. Online courses, especially if asynchronous, are typically offered in the same flexible, self-paced formats that are ideal for independent, self-directed, and self-motivated learners. However since the technology and the instructional design differs, as does the number of opportunities for communication, studies that are specific to that mode of delivery must also be investigated.

Previous research has suggested that there is a higher dropout rate in online courses when compared to the traditional, face-to-face format (Palloff & Pratt, 2001). Some claim that dropout rates for distance education are a full 10 to 20 percent higher than traditional courses

(Carr, 2000; Frankola, 2001), and may range anywhere between 30 and 50 percent, if not higher (Moore & Kearsley, 1996). In a meta-analysis of the literature on distance education since 1985, Bernard et al. (2004a) found a significant mean effect size for retention between distance education and traditional courses; more distance education students dropped out of their courses.

Distance education critics have been quick to use these findings as proof of the inferiority of this mode of instruction in the face of more traditional forms (Diaz, 2002). However, linking higher dropout rates to the efficiency and effectiveness of a medium ignores a variety of other possible explanations for the situation. In their review of distance education research from 1990 to 1999, Berge and Mrozowski (2001), note that current research is unable to explain why the dropout rates of distance learners are higher than those in classroom-based education. Moore et al. (2002) add that “relatively little information [is] available on the persistence of adult learners specific to Web-based education”.

Wojciechowski and Palmer (2005) argued that by gathering a large sample of students and averaging the data, the variability amongst these online learners was concealed. One must also keep in mind that students enrolled in these distance courses are not randomly assigned. Rather, they have voluntarily and consciously decided to take an online course, sometimes despite the fact that a similar one was offered in the traditional format. Comparing students who self-select online courses with traditional ones should consider factors such as their motivation, their needs, and other unique characteristics (Lindsay, Howell, & Laws, 2005).

## **Variables Studied in Online Retention Research**

The following section summarizes and describes the variables that have been studied in previous online retention research. Although many are inspired from research conducted in classroom-based courses (such as demographic variables), these variables have also been employed in distance (online) education settings and have yielded various results on their effects on the retention of undergraduate students.

## **Demographic Characteristics**

Pre-entry student characteristics have long been associated with retention studies. They are easy to collect if using the educational institution's registration system, and in turn, limit human error in data entry (Fowler, 1993). These variables may include a student's age, gender, programme of study, and ethnicity. However, additional variables, such as work and family commitments, previous experience in online courses, and technical or communication skills, must be collected directly from the learners if they are to be included in the study.

Although some studies have simply collected the data to be used as covariates, others have attempted to use pre-entry characteristics to build a profile of the successful online learner. For example, one case study conducted with students who had withdrawn from a Welsh online business programme found that persisters tended to be female, unemployed, and did not have prior higher education qualifications (Packham et al., 2004).

Another profile suggested by Diaz (2002) stated that online students who persisted in their studies tended to be older, had a higher entry GPA, and had more credits completed than others in the course. This increased retention could be attributed to their experience, thereby allowing them to establish realistic levels of expectation and to be better prepared for the course. This does not mean, however, that the students who dropped out did not have similar attributes or that they dropped out because they were experiencing the medium and university-level schooling for the first time (Schlosser & Anderson, 1994; Dupin-Bryant, 2004).

Powell, Conway, and Ross (1990) imply that expectations that are based on past educational experiences are a more significant predictor of retention than a student's past level of academic achievement. In much the same vein, Dupin-Bryant (2004) posits that the number of online courses completed by the learner will have a positive effect on retention in future online courses, and Moore et al. (2002) found that students with more experience in higher educational institutions were more likely to persist in their online courses. On the other hand,

there is also evidence that age is negatively correlated to retention in distance education, likely because older students tend to work more hours (Xenos, 2002).

Students who found themselves still early in their programme of study were more likely to drop out of their course than students who were closer to graduation (Levy, 2007). This phenomenon could very well be a function of an increased level of motivation to completing one's studies as graduation nears, as previously noted by Tinto (1993).

Despite the fact that distance education greatly benefits non-traditional students, many learners who would usually attend, or even prefer, classroom-based courses will also enrol in these types of courses. Brindley (1995) suggested that some students enrol in online courses because they expect it to be easier since there is no need to go to class. These students end up dropping the course because they have underestimated the amount of work needed in independent study, and often end up blaming the medium of instruction for their failures (Lindsay, Howell, & Laws, 2005).

As was the case in retention research in classroom-based environments, there is no consensus that pre-entry variables can act as significant predictors for attrition in online courses (Willging & Johnson, 2004). Coggins (1988) determined that there was no significant difference in attributes (gender, age, number of children, distance from campus, etc...) between students who persisted and those who withdrew. However, the study also found that students who completed the online course tended to have higher educational levels and higher expectations of their own performance.

Levy (2007) found no significant differences in the background characteristics (gender, age, major, GPA, hours of work) between persisters and dropouts in online courses. That being said, the small sample size of dropouts in the study may have contributed to the lack of any significant findings in that category. On the other hand, studies by Ross and Powell (1990) and



by Woodley and Parlett (1983) found that gender did seem to have an effect on retention. Both studies found that more women than men completed their distance education courses.

## **Skills**

The skills and attitudes that are needed to be successful as an online learner are likely quite different than those needed in classroom-based courses (Smith & Dillon, 1999). Since online courses rely on computer technologies to deliver content and for communication, computer literacy skills are obviously essential for online learners (Rovai, 2003). In addition, Rowntree (1995) identifies literacy and discussion, time management, and interactive skills as essential tools to survive in online courses.

Lim (2001) found that for adult students, computer self-efficacy was the best predictor for their retention in future online courses. Osborn (2001) corroborates this by suggesting that a learner who is confident in their computer abilities is more likely to persist in online courses than someone who is not. Bernard et al. (2004b) suggested that online learners may overestimate their skills at the onset of the course. Although it was not known if this variable was also tested while controlling for previous experience in online courses, one could argue that students do not necessarily have the correct expectations about the skills they need when initiating online courses.

That being said, computer skills have been associated with achievement in online courses, but not necessarily as a cause for dropping out. Although technical shortcomings have been cited as a barrier to distance education in the past (Garland, 1993), the experience and skills of online learners today, coupled with the advancements in technology (i.e., increased access to broadband connections), have reduced its impact as a deterrent to successful completion of online courses (Devey, 2006).

## **Academic and Social Integration**

Much like studies conducted in classroom environments, some retention studies in distance education have attempted to isolate psychological and demographical characteristics to establish the profile of a student who is most likely to drop out. Since information from students who have already withdrawn from a course is more difficult to obtain, a popular way to identify these characteristics has been to study “successful” students (e.g., students who achieved a superior grade in the course) and extrapolate the findings to paint the profile of the “unsuccessful” learners. If certain pre-entry characteristics can predict online course success, then the lack of such skills and attitudes could identify possible at-risk students. For example, if a successful student is found to be able to work independently from the instructor, then it is deduced that an unsuccessful student (which is associated with attrition), is more likely to depend on the instructor for guidance.

Some studies have attempted to predict retention or success in online courses by measuring a student’s “readiness for online learning” using pre-entry attributes such as previous experience in online learning, attitudes about distance education, technology skills, and communication preferences (Smith, Murphy, & Mahoney, 2003; Bernard et al., 2004b). Bernard et al. (2004b) considered “readiness for online learning” to be a critical predictor of student persistence in online courses. In their study, four dimensions of readiness were identified: online skills (such as computing and communicating via e-mail and discussion boards), self-management of learning (including time management, personal organization and effective cognitive strategies), personal beliefs about online learning (a positive attitude about one’s efficacy in the environment will yield a positive performance), and degree of interaction (with stakeholders in the course). It was concluded that previous academic performance was the best predictor of future success, but this is a common finding in retention studies conducted in any setting.

Although one cannot deny the link between academic performance and persistence, one must be cautious about drawing conclusions from studies where students completed the course, and then applying those results to students who did not. In fact, in the study by Bernard et al.

(2004b), students who persisted in the course but who received a grade of C or lower were considered to be “unsuccessful”. One could argue that, if applied to Tinto’s (1975) model, this is more a measure of academic integration, which can ultimately influence one’s persistence. Although academic success will likely affect one’s persistence, it does not mean that a student who completed the course necessarily performed well, or that it was ever their intention to do so. Academic success requires persistence, but persistence does not guarantee academic success.

Simpson (2003) analyzed the submission of assignments by students at the UKOU (United Kingdom Open University) and found that about 38% of students did not submit their first assignment. Of those students, only 2% submitted the second. He noted that of the students who did not submit their first assignment, “the overwhelming majority go on to be dropouts”. Although this finding was from an Open University context, the pattern was also applicable to more traditional institutions, as previously demonstrated in studies by Bernard et al. (2004b) and Devey (2006). The lack of academic integration, as measured by a failure to complete their assessments, invariably incorporated higher attrition rates.

On the other hand, when it comes to social integration, researchers have argued that the measure of attrition in distance learning students should concentrate more on external factors (outside the influence of the course) since students enrolled in online courses they are not on campus as often as classroom-based students (Braxton et al., 1997). However, since social integration also includes relationships fostered with instructors and fellow students, and since the medium allows for communication with all stakeholders in the course through various means, both internal factors (within the class), and external factors should be observed throughout the online course.

One advantage that online learning has over other forms of distance education lies with its computer-mediated communication opportunities. The potential for interactivity, using both synchronous and asynchronous communication techniques, can increase a learner’s social

integration within the virtual online learning community, thereby increasing the chances of their retention (Hill & Raven, 2000). But setting the communication expectations at the onset of the course is essential as students in online courses are often frustrated with the lack of timely and/or quality feedback, if there is any feedback at all (Hara & Kling, 1999).

Bertrand, Demers, and Dion (1994) report that students who enrol later in the semester are more likely to drop the course. This may be due to the fact that they have less time to become socially incorporated or to an inability to catch-up with the content and become academically integrated. Moore et al. (2002) found that the most important predictor of online retention is the educational status of the students. Those studying on a part-time basis are more prone to dropping out of their online course than those enrolled full-time. Interestingly, it was also determined that amongst part-time students, the completion rate was higher in online courses than in classroom-based courses (Moore et al., 2002).

### **Motivation**

According to Visser (1998) motivation is the key factor to consider when it comes to student persistence and it is a variable that is often overlooked in retention studies. In a study on motivation in distance education, Visser (1998) used the ARCS model, originally conceived by Keller (1979), to develop an intervention involving motivational messages that would be sent to students at critical times during the semester. Although the sample size was small, Visser (1998) claimed that this intervention improved overall retention numbers in the course. One of the more interesting revelations in this study was that personalized messages were just as effective as collective ones. If true, this could have major implications for distance education courses, especially in large-enrolment courses where a collective message would be much more economical than possibly hundreds of individual ones. The results of this intervention seem to support a simpler study performed by Rekkedal (1982) who found that completed (and submitted) assignments rose by 46 percent when he sent his students an "encouraging postcard".

In another study, Chyung (2001) identified four main reasons why students drop out of online courses and mapped them onto the ARCS model (Keller, 1987). These reasons were identified as an unattractive online learning environment (attention), a disinterest in the content because it was not related to their goals (relevance), low self-esteem (confidence), and unhappiness with the overall online learning experience (satisfaction). Based on these findings, Chyung (2001) designed interventions for particular learning characteristics and claimed to be able to significantly reduce attrition in her institution.

### **Locus of Control and Self-Efficacy**

Dille and Mezack (1991) found that students who had dropped out of a course offered by teleconference had a tendency to have an external locus of control (LOC), whereas persisters were more apt to have an internal LOC. This finding was supported by Parker (1999) who found that an internal locus of control was the key predictor of student persistence in distance education (with courses delivered via correspondence and audiocassette). Kerka (1996) associated internal LOC with self-directed learning, a critical element of successful distance learners (Garrison, 1987). Dille and Mezack (1991) found that students with an internal locus of control were more likely to be successful in their course (defined as a grade of C or above).

In the context of an online course, it was found that students shifted more towards an internal locus of control throughout the semester (Liu, Lavelle, & Andris, 2002). This is perhaps explained by an increased sense of personal competence through the completion of the self-directed assignments (higher self-efficacy), as well as via personal computer-mediated interactions with class members (Liu et al., 2002). Parker (2003) also concluded that students with an internal locus of control were self-motivated, and more likely to complete an online course, and there was a significant swing towards an internal LOC by learners in the online course over time, a phenomenon that was not witnessed in classroom-based courses. Parker (2003) suggested that students who scored more internally on the LOC scale should be encouraged to register for non-traditional delivery methods (such as online courses), whereas external LOC learners should not.

Bernard et al. (2004b) had similar results and found that self-direction, which was related to an internal locus of control, became more positive (internal) at the end of the semester for students who remained in the course. However, in a study of online learners in business administration courses, Levy (2007) did not find that academic locus of control had an impact on predicting attrition.

## **Satisfaction**

Studies about learner perceptions in distance education have tended to focus on satisfaction, attitudes, interaction, and perceived learning. A student's lack of satisfaction with an online course is a major factor in their decision to drop out (Levy, 2007). Satisfaction levels for distance learners, much like in the classroom, are often affected by organizational factors, including the educational environment, management, and support services (Simonson, Smaldino, Albright, & Zvacek, 2006).

In their Sloan consortium report, Lorenzo and Moore (2002) isolate student satisfaction as one of the "five pillars of quality online education". Much like a customer, satisfied students received timely, personalized, and responsive services and support. This included academic advising, library services, and tutoring. According to the authors, one of the best indicators of student satisfaction lies in the retention rates (Lorenzo & Moore, 2002).

A lack of satisfaction with the course environment has been identified as a prominent reason for student attrition in online courses (Chyung, Winiecki, & Fenner, 1998). The same study also concluded that course structure and a mismatch between professional and personal interests were also causes of attrition for adult distance education students. This was found to be especially true in the early stages of a programme where dissatisfaction with a learner's first or second course would have a significant impact on their decision to pursue their studies (Chyung et al., 1998).

In a study involving students enrolled in a live, interactive, television-based course, Biner, Dean, and Mellinger (1994) isolated seven satisfaction factors which could be measured in students. These included satisfaction with:

- instructor/instruction
- technology
- course management
- at-site personnel
- promptness of the delivery of material
- support services
- out-of-class communication with the instructor

A common cause cited in the literature for attrition in online courses was poor course design (Khan & Vega, 1997). This may include various issues such as the volume of coursework, the usability of the course website, and the course assessments (Packham et al., 2004; Willging & Johnson, 2004). When assignments were too difficult, there was little to no interaction built into the course, there was a mismatch in learning style, and there was a lack of technical support, students were more prone to drop out (Willging & Johnson, 2004). Not surprisingly, students who were dissatisfied with their learning environment were more likely to cease their participation in the course (Chyung, 2001).

On the other hand, Harrison (2006) cautioned that dissatisfaction is not always the main reason why students decide to cease their studies. Although studying the phenomenon will enlighten researchers as to the reasons why learners withdraw, it does not explain why, under the same circumstances, others persist.

### **Independent Learners**

An independent learner is an individual “who takes responsibility for his or her own learning and is instrumental and active in the learning process” (Brindley, 1995). Others have classified this as “self-directed” learning (Moore & Kearsley, 1996). Rovai (2003) posits that students who are not

self-directed will likely do better in a traditional course format, as opposed to an online environment, where an independent learner who is more motivated to make and maintain consistent efforts may thrive. Rossett and Schaefer (2003) add that many students are not ready to take control of their own learning because they do not have experience in doing so. They observed “under-prepared people with lifelong habits cultivated in classrooms dominated by instructors”. Not surprising that confusion reigns when these students transfer to an online environment.

Learners attracted to the flexibility of open distance learning do so with an even wider variety of backgrounds than was the case for adult students 20 years ago. More are educationally disadvantaged and, often, independent learning is entirely unfamiliar to them (Brindley, 1995).

### **Rovai’s Model**

Much like Kember’s (1989) approach to the creation of his model, Rovai (2003) combined those created by Tinto (1975) and Bean and Metzner (1985), then added additional variables to include the skills required by online learners (Rowntree, 1995), the unique needs of distance learners (Workman & Stenard, 1996), and for the matching of teaching and learning styles (Grow, 1996). The end result was his version of a composite persistence model for online education.

In so doing, Rovai’s model combines the student’s demographic information and previous academic performance with computer, writing, and time management skills to describe the student’s pre-entry characteristics. Once the student is admitted, external factors such as finances, work, and family responsibilities influence their goal and institutional commitment, as well as their academic and social integration. Other internal factors in the model include program fit, study habits, course absenteeism, satisfaction, self-esteem, and learning/teaching styles. The interplay of these internal factors, which are influenced by the entry characteristics and external forces, yield a decision regarding persistence in one’s studies (Rovai, 2003).



Since computer literacy skills play an important role in the model, it follows that technology has an influence on retention in Web-based instruction. Moreover, it marks a shift in emphasis in the construction of the online learning retention model toward the inclusion of computer-based interaction skills and computer literacy as an entry variable. External factors, such as work and family commitments, which may not have been an issue with students living on-campus, were deemed to be quite influential with distance learners whose learning environment was undefined. Rovai's (2003) model added a component entirely devoted to external forces such as, hours of employment, finances, family responsibilities, and outside encouragement.

There is also added emphasis on the importance of self-directed learning as a key characteristic among persisters. Although this would usually include a motivational factor and a desire to continue in one's studies, there are too few studies in that domain to conclude that this is indeed the case. Other entry skills introduced into Rovai's (2003) model have been linked to successful students (Bernard et al., 2004b), but there is very little evidence of their effect, direct or indirect, on the retention of students in courses given online. Nonetheless, Rovai's (2003) model, although untested, provides a framework that is based mostly on previously validated models and a multitude of studies, but is tailored specifically to online learners.

### ***Reasons for Dropping Out***

Since one of the main goals of this dissertation is to identify the reasons why students drop out of their online courses, it is important to scour the literature in all distance education settings that can possibly contribute to this study (including the e-business sector, open universities, and adult education). Where the previous section examined the results of general studies on retention in distance (and online) courses, the following segment will concentrate on research carried out specifically to identify the reasons why students dropped out.

In a study based on students enrolled in her correspondence courses, Garland (1993) identified several factors that contribute to student dropout in distance education. They are grouped into four categories which she labelled as "barriers to distance education":

- *Institutional* barriers are factors that are influenced in some capacity by the educational institution itself, such as costs, poor instructional design, bureaucratic procedures, and scheduling problems.
- *Epistemological* barriers refer to a mismatch between the content and the learner's expectations and capabilities (content is too technical, not personally relevant, or requires extensive prerequisite knowledge).
- *Situational* barriers include issues that arise within a student's own life circumstances (loss of job, illness in the family).
- *Dispositional* barriers encompass personal attributes that have an effect on a student's persistence in the course (motivation, learning style, stress, procrastination, lack of self-confidence).

According to Garland (1993), the primary causes of attrition are variables classified as situational and dispositional barriers. Specific factors cited included the uncertainty of educational or professional goals, multiple sources of stress (school, work, and family), poor time management, conflict in learning styles, and fear of failure. If this was indeed the case, then the majority of the barriers resided within the learner and not the institution. This issue was addressed by Conklin (1997) who argued that even though the most common barriers are outside the control of the institution, educational administrators should nonetheless concentrate on what they can influence.

The study by Garland (1993) produced two other important contributions to the literature in this field. The first was to prove that both persisters and non-persisters experience the same potential barriers to completing their course, an issue supported by Brindley (1995). The second was to show that qualitative data collection techniques can be efficient and effective in gathering information from students, especially when there was a need to pose follow-up questions that go beyond the "I had no time" responses. To do so, Garland (1993) used interviews to gather additional data directly from the students who had dropped out of their course. This type of information has been noticeably absent in many previous studies on the

same phenomenon, most of which relied almost exclusively on surveys and registration data to gather information about them.

The most common reasons students reported for discontinuing their courses included personal study problems, lack of family support, and difficulty in accessing or understanding the content (Garland, 1993). The difficulty of the subject matter itself was also cited by Garland (1993) as a barrier to persistence, a fact that was supported by Bernard and Amundsen (1989). This is by no means unique to distance education courses. Course and programme difficulty play a role in traditional settings as well, as pointed out by Astin (1997), who suggested that retention is higher in business and social science courses than in engineering because of the complexity of the subject matter.

One must keep in mind that Garland's (1993) results were based on a case study involving a small number of students enrolled in five different courses offered mainly through print-based technology. In addition, enrolment was open, meaning that any student could begin the course, regardless of their qualifications, or lack thereof. If the learners did not have the pre-requisite knowledge necessary to take the course in the first place, it could very well explain why difficulty with the subject was one of the main reasons they withdrew. But despite its obvious limitations when it comes to generalizing from the findings, this study provides a methodological framework and an insight into common distance education barriers that could be applicable to online courses today.

Building on the work of Garland (1993), Morgan and Tam (1999) used unstructured, "free-flowing" interviews with students who had dropped out, as well as with those who had completed their distance education course, to identify all negative factors that the students had experienced. Although the sample size was small, the most frequently cited barriers were institutional (e.g., learning materials arrived late, course content was outdated, insufficient feedback on assignments). Furthermore, these barriers were mentioned both by persisters and

dropouts alike, and of those who withdrew, all mentioned at least one barrier that was within the institution's control (Morgan & Tam, 1999).

In a distance education study conducted in Australia, Jegede and Kirkwood (1994) used a factor analysis to isolate variables that contributed to distance learner anxiety at the onset of the semester. Using a survey as their data collection instrument, they found and isolated seven concerns: content, environment, finances, readiness, time, employment, and family support. The same survey was issued at the end of the semester and it was found that students had significantly different answers on five of the seven factors. A student's anxiety towards the course content, their finances, and their readiness for distance learning decreased as the semester went on, and their concerns about time and employment increased during the same timeframe. Moreover, the researchers found that overall anxiety levels increased throughout the semester (Jegede & Kirkwood, 1994). This study validates the notion that the attitudes and behaviours of the learners change over the course of a semester and that longitudinal studies can apply to individual courses, rather than to the lifespan of a programme of study.

In analyzing an exit survey used by the United Kingdom Open University, Simpson (2003) identified the main reasons that students listed for dropping out of their online course as: falling behind in the course, increased stresses at work, increased pressures at home, and a personal illness or disability. This study also suggested that although a lack of time was clearly a factor identified by the students who dropped out, clear conclusions could not be drawn from that answer since it was unclear if this was the result of content overload or of a misrepresentation by the institution on the amount of time needed to complete the course (Simpson, 2003).

When students make the decision to drop out of a course, they tend to do so early on. This is often demonstrated by the lack of work that they have done up to that point in time (Rekkedal, 1982). Students who complete work for a course are more likely to persist in the course than those who do not. Simpson (2003) reports that over 35% of distance learners drop the course before submitting any work. This finding suggests that their early impressions and initial

experiences with the course have a large impact on their decision to remain in the course. Tyler-Smith (2006) suggests that it is during the early stages of an online course that interventions to achieve greater retention rates should be carried out. This should focus especially on finding ways to help learners establish realistic expectations, and to cope with the new experiences.

Some researchers suggest that there are additional challenges present in online courses, as compared to other delivery mediums, for both the student and the instructor. The technological skills needed to simply participate in the class present one such challenge (Wojciechowski & Palmer, 2005). Technology barriers were also cited in several studies as a major reason why students drop out of distance education courses (Garland, 1993; Wang-Chavez et al., 2001). It was revealed that students enjoyed the flexibility and convenience of online courses, but that a lack of social or face-to-face interaction sometimes made the experience quite frustrating (Wang-Chavez, Branon, & Mikolaj, 2001).

Smith and Dillon (1999) suggested that the autonomous nature of asynchronous Web-based courses, and subsequent learner-controlled pacing, can lead to increased confusion, and consequently to lower retention rates. The role of the online instructor is no longer the traditional “sage on the stage” and has instead become more of a “guide on the side”, necessarily relinquishing much of the control of the flow of content to the learner. This entails added responsibility on the student’s part that they must be ready to undertake (Palloff & Pratt, 2001). Not surprisingly, inexperienced online learners oftentimes complain that online courses are not structured enough for them, as pointed out by Moore et al. (2002). Unfortunately, many learners are ill-equipped when it comes to establishing their own goals, to allocating time to their studies, and to providing a consistent effort throughout the course (Rossett & Shafer, 2003).

Bleed (2005) suggests that “life interruptions” are the most common reason why students do not complete their online course. This may include anything from changing job schedules, to financial limitations, to family obligations. Diaz (2002) suggests that many online students will

drop a class because “it is the right thing to do”. In other words, they realize that they cannot devote their energies to the class for a variety of reasons, and consequently drop out. Based on this, one has to wonder if the same reasons why the students opted to enrol in the online course are at the root of their eventual withdrawal.

Another reason why students in e-learning courses drop out is the additional cognitive stress they face, especially if it is the first time they experience this medium of delivery. In addition to mastering the content, online learners must also learn how to negotiate with the technology, the learning management system, the computer-mediated communication techniques, and other skills that are crucial for success online (Tyler-Smith, 2006). Sweller (1994) suggests that according to the cognitive load theory, situations where the learner is unable to process and incorporate new information into existing mental models cause them to enter a phase of cognitive overload of their working memory. The learner’s inability to adapt to the situation will impede the learning process, decrease their confidence, and may ultimately lead to attrition, especially early in the e-Learning odyssey when the notion of learning online is novel and unfamiliar (Tyler-Smith, 2006).

## **Conclusion**

Applying the lessons learned from past research, be they drawn from classroom-based environments, or from distance education settings (including online courses), to the context of this study is far from seamless. The research setting may introduce a population that is quite different than other settings, not to mention the effects of rapidly evolving technology and methods of design, both of which govern online learning. General assumptions can quickly be made when transferring information from one setting to the next, but without a proper analysis of the environment in which the study is being conducted, the research methodology can easily be flawed.

The following section will look at some of the potential problems that accompany applying past retention research in distance education to the setting we have in this particular study.

Particular emphasis will be placed on summarizing the issues regarding the definition and measurement of retention, the application of past retention research to the online environment, the problems with comparative studies that have been conducted in the past, and the notion of the non-traditional student.

Garrison (1987) criticizes distance education retention research as being deficient in its ability to help understand why students drop out. Most of the previous research has been demographic and descriptive and although it has provided some useful information about the nature of the problem, he argues that “at present, no adequate theory of dropout specific to distance education exists to explain dropout behaviour and guide research”. He adds that because of the “complexity of human behaviour”, it is imperative that research in distance education consider the numerous variables that can affect retention. Be they psychological, sociological, economic, and/or technological, everything must be investigated concurrently, not in isolation, if a proper picture is to be painted of the phenomenon (Garrison, 1987).

However, this may be easier said than done. Undertaking “all-encompassing” research projects often leads to vague conclusions with little practical significance in the field simply due to the volume of data collected. One need only look to the little variance that has been explained by the popular retention models and theories as an example of the applicability and efficiency of these multi-variable studies. This is not to say that large exploratory studies are not useful, especially in environments that lack research, but these projects should be guided by previous findings as much as possible in order to focus on those variables that are most likely to be of importance.

Because of the sheer complexity of the dropout phenomenon, Garrison (1987) suggests that it would be more useful to concentrate on understanding retention within a particular context before attempting to generalize and compare statistics across institutions. He adds that “...perhaps a more profitable research strategy would be to study in depth particular situations over time and to develop situation specific models and explanations”.

Bernard and Amundsen (1989) summarized the three main arguments that have been used by researchers in criticizing previous retention studies in distance education as:

1. Not enough attention paid to defining attrition,
2. The models that have been developed are descriptive rather than explanatory,
3. The effects of the numerous variables that affect attrition have been ignored.

The first criticism is well-warranted. As was mentioned in the previous chapter, defining what is meant by retention, what constitutes a dropout, and how this phenomenon is measured, is oftentimes ambiguous or completely ignored. The second criticism, regarding the fact that previous studies are more descriptive than explanatory, is by no means a revelation since it has plagued the field of study for some time (Tinto, 1975; Garrison, 1987). Attempts have been made to rectify this problem by undertaking studies that attempted to explain the dropout behaviour. However, this led directly to the third criticism identified by Bernard and Amundsen (1989), the fact that numerous variables that affect retention have been ignored in the literature.

This third criticism highlights the paradox of research on retention in higher education. On the one hand, due to the complexity of the possible contributing variables that lead to the dropout decision, researchers must design their studies so that they are “all encompassing”. However, studies that attempted to cast a wide net have invariably failed to produce a theory or model that has been useful or practical for educational administrators for a variety of reasons (low variance explained, low generalizability, too complex a model, etc...). Therefore, in order to increase the statistical significance of their studies, researchers have concentrated their efforts on a sampling of those contributing variables, thereby constraining the overall application of their model to start with.

### ***Definition and Measurement of Retention***

One of the major issues with retention research has been what Tinto (1975) calls the “uncritical use of the term dropout”. As a consequence of its indiscriminate use, he suggests that dropout



has unfairly become associated with individual failure, blurring the fact that there are different ways that an individual can leave college. This, in turn, may have blinded institutions to the role that they can play in deterring dropout (Tinto, 1993).

Simpson (2003) reports that one of the reasons that it is difficult to “spot leaks” in enrolment is because there are several ways that students can withdraw from a course. For example, the United Kingdom Open University (UKOU) has pinpointed 12 different ways that a student can do so, including: withdrawing before the start of the course, dropping out before completing any work, or never completing any assessments but not formally withdrawing. Surely a student who has dropped out because of academic failure must be viewed differently than one who has withdrawn from their course because of feelings of isolation from their classmates or due to financial difficulties.

Without a clear definition of what is meant by retention, its measurement will perpetually vary. Some schools for example, will include students who alter their course schedules during the official “add/drop” period of the semester in their retention calculation while others will not (Carr, 2000). There is also no mention of how to deal with students who fail the course because they essentially stopped participating, yet never went through with “officially” removing themselves from the class (some define this as “passive withdrawal”), or with students who never completed course work but did not withdraw from the course (they are sometimes called “nonstarters”).

In large educational institutions, where it is not uncommon to have several sections of the same class offered in the same semester, students often switch sections because of better scheduling, or peer pressure, or to change instructor. Should this be considered dropping out? In addition, some researchers will argue that failing the course is akin to dropping out because the educational goal was not achieved (Sharma, 2002). Although, one could counter that in order for academic failure to be seen in this light, one would need to have been aware of each individual student’s goal beforehand to know if indeed it has been reached or not.

Kember (1989) warns that if researchers fail to clarify what is meant by retention and attrition when presenting data, their numbers will have limited meaning. It will be important to resolve such issues within an institution in order to make any type of comparisons possible, either internally or with other institutions (Simpson, 2003). Kember (1989) also cautions that educational institutions have a tendency to mask their dropout rates, and in some cases it is their policy not to record them. There is an inherent fear that high dropout rates will reflect negatively on the school, so they are not calculated or publicized. This type of attitude invariably deprives administrators of an important quality control measure.

Future research on retention should therefore take heed to properly define what is meant by the term, as well as how it is to be measured. Only then will one be able to make comparisons amongst programmes/courses at the same school, or comparisons with other institutions, and in doing so, ascertain if interventions on their part are necessary or possible.

### ***Evolving Demographics***

Applying what was learned in previous distance education studies to today can be problematic because the issues that affect retention are constantly evolving and are highly complex (Berge & Huang, 2004). Universities are unique in their institutional culture, academic emphasis, and demographics, and before conclusions can be drawn from analyzing registration data, one must first investigate who is enrolling in these courses (Berge & Huang, 2004). This is especially the case in online learning where not only is the technology rapidly evolving, but so is its clientele. The rapid changes and proliferation of technology, coupled with the sustained effects of globalization, continually alter the demographics of online learners as an increasing amount of them are given this educational opportunity.

For example, according to several researchers (i.e., Garland, 1993; Wojciechowski & Palmer, 2005), technological barriers are a common deterrent for persisting in online courses. However, the results of surveys issued to students enrolled in online courses at Concordia University are showing that technological barriers no longer seem to be an issue. The students appear to have

the necessary tools (access to a computer, high-speed Internet connection) and computer skills (computer-mediated communication, Internet browsing) to be self-sufficient in an online environment (Bernard et al., 2004b; Devey, 2006). However, this is the case for students enrolled at this particular university, and technological barriers may still very well be prevalent in other institutions, or for particular courses that require specialized skills.

For the most part, the students enrolled in today's universities are products of a cyber-culture that makes integration into the online environment much easier since they are already familiar with the symbol system (using emoticons and acronyms) and culture ("netiquette"). They are adept at sending and receiving text messages on their cell phones, exchanging e-mail addresses and MSN nicknames instead of phone numbers, sharing their thoughts and feelings or posting pictures on their personal Website (i.e., My Space, Facebook, Blogspot, etc...). However, Bennett, Maton, and Kervin (2008) caution that there is a lack of concrete evidence to suggest that the "Net generation" of learners require a radically different approach to their education. How applicable is Tinto's model, created over 30 years ago, to this group of e-learners? Is social integration into the course as much a factor for retention now as it was then? Making generalizations is difficult when the context is constantly being altered from one course to the next, from one medium to the next, from one institution to the next, and from one generation to the next.

There is also an innate problem with basing a distance (including online) education model on one that was developed for a classroom setting. Kember (1989) suggests that previous retention models were meant for students enrolled full-time in a face-to-face setting, and accordingly, the model put increased emphasis on social and intellectual integration with the educational institution. If the distance education clientele is indeed non-traditional, then are these previous models relevant in this context? Rovai (2003) argues that not only do the needs of distance education students differ from those in the classroom, but that the learning environments vary as well.

It was also noted that previous adaptations of Tinto's model, primarily carried out in classroom settings, have been for retention in programmes. However, in the limited cases where they have been applied to distance education, the context was usually confined to a single course (Bernard & Amundsen, 1989). Bernard and Amundsen (1989) suggest that although individual course characteristics may not have a large effect on the overall decision to withdraw from a programme, this is not the case in decisions to drop out of individual courses where "issues like the structure and delivery of the content and intended learning outcomes may influence decisions to drop out as much as student characteristics and attitudes". Therefore, if individual courses are to be examined, one must be conscious of the differences amongst the subjects, as well as with the instructional design of said courses.

Furthermore, if early intervention is a means of combating attrition, then it is in the interest of all stakeholders to be able to identify the earliest signs of the behaviour that leads to dropout. Although dropping a single course may not necessarily lead to withdrawing from an entire programme, it is nonetheless one of the early indicators of such a decision. After all, the earlier the warning signs are identified, the sooner that interventions to thwart such behaviour can be introduced, thereby increasing the chances of retaining the learner.

Unfortunately, research on retention in the field of distance education is plagued with much of the same criticism from previous studies. Generally, they are based on the same models that were geared toward residential, full-time, classroom-based freshmen students, and this limits the ability to make generalizations from the models. Although Kember's (1989) model has been constructed to reflect the distance education context, it is still based on a traditional model, as well as on the assumption that all students enrolled in distance education are "non-traditional". Furthermore, Kember's (1989) longitudinal representation of the dropout decision in individual courses is based on one that was designed for programmes of study, and there is no mention of the diversity amongst the courses themselves (subject matter, instructional design, etc...). Rovai's (2003) model, on the other hand, although "tailored" for students enrolled in online

courses, is still grounded in models by Tinto (1975) and Bean (1980), and has never been actually tested.

### ***Identifying the Online Learner***

Much of the previous research on distance and online courses has involved non-traditional students because it was found that in many cases, these are the types of students who embraced online courses and programmes. This clientele was described as tending to be older, to having more family and work responsibilities, to studying part-time, and to not living on campus (Kember, 1989). The research on students in distance education settings has also looked at a number of variables that seem to have an effect on persistence. However, once again, there is no consensus as to where the main source of variance is to be found (Braxton et al., 2004).

Previous studies involving demographic data have attempted to profile the “typical online learner”. According to Carr (2000), school administrators believe that distance education students are liable to be older, and consequently are busier. In addition, Diaz (2002) reported that online students tended to have completed more post-secondary courses and had a higher GPA than those in traditional courses. However, this is very contextual as it depends on the course being offered, the institution offering it, and a litany of other variables that make it impossible to pinpoint the characteristics of e-learners that can be generalized throughout the research.

For example, the results of surveys issued by Bernard et al (2004b) and Devey (2006) showed that the vast majority of students enrolled in online courses at Concordia University were under the age of 25. This was no different than students enrolled in traditional classroom-based courses at the same school (Concordia University, 2008). In addition, the results of the survey showed in both cases that approximately 60% of the learners were full time undergraduate students (taking four or more courses). This is almost equivalent to the University’s overall figures, which showed that 62.6% of its 26,000 undergraduates were full-time students. The

bottom line is that in order to design and deliver better online courses, the learners enrolling in those courses must be identified (Garrison, 1987; Devey, 2006).

### ***Comparing Retention Rates***

The higher retention rates in classroom-based instruction, when compared to alternate forms of education, have been a focal point for many detractors of distance education. Many have used the results of these comparative studies to support their claims that Web-based learning is inferior to the traditional classroom. However, these comparison studies are inherently flawed and, consequently, so are its conclusions.

There are several problems with these claims. Foremost, when conducting comparison studies, all extraneous variables must be kept constant so that those variables being compared are genuinely isolated and measured. Consequently, any differences found between the samples can be attributed to discrepancies among the independent variables. Therefore, when conducting proper comparison studies between online and traditional courses where the delivery medium is to be the variable under study, one would have to establish some sort of consistency amongst the possible confounders. Needless to say, controlling for these confounding variables is extremely difficult to accomplish due to the logistics involved. For example, a proper comparison study would have to somehow control the variability in the subject matter, the instructional design, the assessments, and the learners enrolled in the courses involved in the study. According to Smith and Dillon (1999), “the problem with comparative studies between distance education and classroom learning lies not in the comparison, but rather in the media/method confound”.

Although comparative studies between face-to-face and online education may vary greatly in their base design, two particular assumptions seem common amongst them. The first assumption is that students enrolled in an online course are in a learner-centric environment in which they are free to move and interact at their own pace in a mostly unstructured setting. Sometimes the main instructional strategy of the course is revealed but, often, as is usually the

case in multi-institutional studies, they are not. The second assumption is that, in a traditional course, the pace and structure is governed by the instructor. That is, the dominant method of instruction used by the professor is the lecture, and the students are passive vessels that attempt to absorb everything that is discussed during the live classroom session.

This may seem to be a purposefully exaggerated description, but the point is that one must consider that a given teaching method, although easily reproduced in a particular environment, is not necessarily unique to it. For example, traditional courses that make use of a learner-centric approach (i.e., follow constructivist principles) may encourage collaborative work and have flexible deadlines or mastery assignments that would allow for students to pace their instruction. Furthermore, nothing prevents classroom instructors from making use of a course website to post their lecture notes and assignments or from using e-mail and discussion boards to elicit communication outside of scheduled class times.

Similarly, some e-learning designs are very much instructor-centric (i.e., follow objectivist principles). They control the pace of delivery of the content and provide additional structure to the course by using a much more linear design to the instruction, thereby forcing students to follow a specified learning path. Video lectures and assignments can be posted on particular dates (to control the pace), and in synchronous courses, communication between the instructor and students may be limited to scheduled class times.

Seldom is the instructional method mentioned in these comparative studies and one has to wonder about the possibility of confounders because of this oversight. As Lindsay, Howell, and Laws (2005) put it, by making these “simple comparisons between traditional and distance education, researchers incorrectly imply that all types of instruction in these two formats are exactly the same”. Could it be that the actual comparison being made in these cases is one between instructor-led/objectivist vs. student-centric/constructivist methods?

## ***Summary***

Whether in a traditional context, or in a distance education context, retention is a multi-dimensional and complex issue (Powell, Conway, & Ross, 1990; Berge & Huang, 2004). In attempting to explain the phenomenon, researchers have traditionally repurposed and retooled existing models and theories that have been borrowed from a variety of disciplines including: economics, psychology, sociology, and management. But, as this review of the literature has attempted to demonstrate, although there has been some progress in the field of study, no all-encompassing solution has been endorsed, nor have any retention models been proven to be adequately effective in explaining the phenomenon (Braxton et al., 2004).

In fact, in a meta-analysis of studies on attrition, Storrings (2006) concluded that there was no significant effect among the predictor variables that contributed to attrition in distance education. Perhaps it is time to accept the fact that retention, being an ill-defined problem, cannot be explained by an all-encompassing model or theory. There are too many variables involved, and each institution's environment will require individual, custom-made solutions to alleviate their own attrition issues. Although Kember (1989) endorsed the continued research in constructing and refining retention models, he was opposed to developing an all-encompassing theory suggesting that "a theory that could fully explain every aspect of the attrition process would contain so many constructs that it would become unwieldy if not unmanageable".

Models, on the other hand, are a more suitable method of explaining complex phenomena since they simplify the process so that major factors are more evident (Tinto, 1975; Kember, 1989). However, models that have been produced in the past have not performed well when put into practice, as demonstrated by the little variance that they have been able to explain. And consequently, attempts to predict a student's retention given their demographic information, their skills, their commitment levels, and their ability and willingness to integrate socially and academically in the educational institution, has not proven to be of much practical use for the educational administrator. With the exception of basic entry requirements based on previous academic performance, and more rarely on the results of standardized tests, entrance exams,



and/or character references, no practical intervention has been put forth to curtail attrition by using these models, especially in online courses.

Perhaps it is time to side with Munro (1981) who compares the dropout phenomenon to that of an automobile accident: there are many possible causes of it, but the end result is the same. But proposing practical interventions to combat an ill-defined problem has proven to be an ominous task for retention researchers, and maybe this is because they are casting too big a net. Rather than attempting to model all of the possibilities that could lead to leaving an educational institution, perhaps one should start with the investigation of the earliest signs of attrition behaviour: at the level of the individual courses in a given school. In other words, instead of trying to explain the cause of all automobile accidents on the roads, or of attempting to predict the chances that a given driver gets into one, perhaps a researcher's energies are more efficiently used in concentrating on reducing potential accidents in their local traffic. After all, one is more likely to make a difference in their neighbourhood first and foremost.

Studies conducted with students who drop out of courses and programmes present a methodological paradox to the researcher. Since demographic and archival information can only offer a limited amount of data, researchers would benefit greatly from collecting information directly from the individuals that they want to study, namely those who have withdrawn from their course. However, these same students may not be likely to answer a survey or respond to a call for interviews since they have already severed ties with that learning community. Past studies have attempted to describe the students who drop out as lacking the qualities and characteristics of "successful" students. But since "unsuccessful" students do not necessarily drop out of their courses, and strong ("successful") students will drop out, one can not equate performance with persistence.

In an attempt to better understand the influence and the interplay of the many variables involved in the dropout decision-making process, researchers have turned to longitudinal studies. However, past attempts to model this behaviour, often using a path analysis

methodology (i.e., Munro, 1981; Bean, 1982; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1983), have not been able to account for a majority of the unexplained variance. In addition, using path analysis condemns the study to the assumption that the dropout decision is a linear one that takes place at the end of a given year (when the data is collected), and in doing so, it neglects to account for any trends in the timing of the student's ultimate resolution. Furthermore, the studies attempted to predict attrition from programs (not courses) amongst freshmen students enrolled full-time at residential, four-year universities in the United States at least thirty years ago. In other words, due to the participants and the scope of the studies, the ability to apply its findings to other educational settings is quite limited. Perhaps the time has come to use a different methodology with the ultimate goal of providing tools to work on the prevention of attrition, as opposed to its prediction.

Much has changed in the world of academia since Tinto proposed his longitudinal model. With globalization and technology opening the doors to learners who could only dream of such opportunities until recently, the face of today's "typical" learner is anything but. Before one can assume that it is non-traditional learners who are embracing online learning, one must first investigate this claim within their own context, and in doing so, not only determine who the students are, but if the distinction of traditional and non-traditional is still warranted to this day.

In addition to the gaps that have been identified in the literature on retention research, focusing on asynchronous Web-based courses offered at research-based universities adds another layer of complexity. Not only is research in this context scarce (Simpson, 2003), but it also adds new variables that must be considered in any studies involving the medium (i.e., instructional design, technological skills, communication skills, etc...), in addition to the ones that govern distance education in general. Since enrolment in online courses is a voluntary decision on the part of the student, one would have to understand their reasoning for choosing this type of course, as well as their experience and expectations with the medium of instruction before attempting to explore the reasons why they drop out.

Despite the fact that this may not have been the case in the past, the role of educational institutions in the retention of their students is ever-more prominent today (Braxton et al., 2004). Whether it is because of the increased competition for students in the global marketplace (especially in the recruitment of distance learners), or the rising evidence emanating from studies that collect information from the students who drop out of their courses (Garland, 1993; Morgan & Tam, 1999), educational administrators are becoming more conscious of the role they can play in curtailing this phenomenon in online instruction. Subsequently, more studies are needed within the confines of the institution in order to properly identify the needs, expectations, and characteristics of online learners, the reasons why they are dropping out of their courses, as well as the timing of their decisions. Only then can concrete and practical interventions be designed and implemented to help prevent enrolment leaks. For today's educational institution, much like for their students, academic persistence is increasingly becoming a question of survival.

## **METHODOLOGY**

The purpose of this chapter is to describe how selected gaps identified in the literature review will be addressed. This section will start with a brief summary of the research questions that are guiding this dissertation, and subsequently, an explanation of the methodology that will be used to address them. Since retention is not only a complex issue, but also a contextual one, it is important to illustrate the research setting before describing the participants. The procedure that will be used in this study will incorporate several stages of data collection, which will be described in detail, along with an explanation as to how this data will be analyzed. A significant portion of this chapter will be devoted to describing the unique statistical methodology that will be used to analyze and describe retention patterns in the individual courses being investigated.

### **Research Questions**

As presented in the introduction chapter, the following questions are guiding this dissertation:

- What is the profile of the students enrolling in online courses at Concordia University? How do they compare to the general student population? How do they compare to student populations in the distance education literature?
- Why are students enrolling in online courses? What expectations do they have about their online course? What prior educational experiences and skills do they bring to their online course?
- Are there particular points during the semester where students are at a higher risk of dropping out of their online courses?
- Why do students drop out of online courses? Are there demographic, attitudinal, integration, and/or behavioural variables related to persistence?
- What interventions can the institution take to curtail attrition in online courses?

In order to begin to answer these questions, there are several data sources that must be mined. For example, collecting demographic information about the students that are enrolled in the online courses will require tapping into the university's registration database. Measuring the students' expectation levels, skills, and previous experience can be accomplished by issuing a survey. Surveys can also be used to collect data pertaining to the reasons why students enrolled in, and then dropped out of their online course. Hence, collecting the data needed to answer the stated research questions will require employing a mixed-method approach that collects quantitative data through surveys (using Likert-scale questions), course grade sheets, and registration data, and qualitative data through course evaluations and open-ended questions on the surveys.

## **Research Setting**

Since the goal of this research project was to study retention in undergraduate online courses, a setting where these courses are offered was needed with enough of a clientele to provide an adequate and representative sample of online learners. Concordia University (Montréal, Québec, Canada) had the numbers and it also boasted a relatively new, but thriving amount of online learners.

Concordia University, established in 1973 via the merger of its two founding institutions, Sir George Williams University and Loyola College, is the largest English-speaking academic institution in the province of Québec. The Sir George Williams campus spans roughly four city blocks of downtown Montréal in what is now being called "le Quartier Concordia". It houses the headquarters of the John Molson School of Business, the Faculty of Engineering and Computer Science, the Faculty of Fine Arts, as well as the majority of the University's administrative offices. The Loyola campus, a 20-minute shuttle bus ride away in residential Notre-Dame-de-Grâce, contains the nucleus of the Faculty of Arts and Science, the University's largest faculty, as well as the main sports complex and student residence.

Of the over 30,000 students enrolled at Concordia, 40% of them are listed as part-time learners (Concordia University, 2008). This is very much in line with the institution's mission statement regarding accessible and flexible education. Although the majority of its students are English-speaking, this despite being situated in the second largest French-speaking city in the World (behind only Paris, France), Concordia's clientele is very much diversified and multi-ethnic. The international flavour can be attributed to the popularity of the city, the institution, and very likely to the low tuition fees. This phenomenon is not only applicable to the students, but also to the 900 full-time and 1000 part-time faculty as well.

Despite its flexible and accessible learning opportunities, Concordia lagged behind many other educational institutions in distance learning offerings. In the early 1990s, their only "true" distance education initiatives included a television-based Introduction to Culture course (offered by the Department of Sociology and Anthropology), and a computer-based course on the philosophy of distance education. These courses had varying degrees of success, but the upkeep, especially for the anthropology course, was not particularly cost effective. This became much more of an issue in the mid-1990s when the Québec provincial government made drastic cuts to the funds allotted to institutions of higher education, consequently slicing the operating budgets of all universities. The amount of government funding received by Concordia, like its sister institutions throughout the province, is based on a formula that is dependent on enrolments (also known as full-time equivalencies or FTEs). Concordia dealt with the budgetary crisis in three ways: it offered early retirement packages to its senior professors, it sought to increase enrolment by lowering entrance standards, and it increased class sizes.

In an effort to consolidate resources for a subject that was taught across several departments in the faculty, Concordia's first online course was launched in the winter of 1996. "Discover Statistics" was an introductory statistics course that offered a broad overview of the subject and targeted students enrolled in various departments. The initial pilot of the course was made up of two dozen students from the department of Exercise Science. It was obvious from the get-go that the project needed much work and fine-tuning. Content was often made available in the

same week that assignments were due, feedback was nonexistent, and students were left to fend for themselves throughout the semester. Thankfully, additional resources were made available in the following semesters, and the course was refined and rebuilt to eventually emerge as a model for similar projects at the University.

Online courses slowly began to increase in popularity at Concordia, partially because of the economies of scale, but mostly due to student demand. The instructional technology departments within the University's faculties began experimenting with videotaping classes and then streaming them online, and using a learning content management system to post course notes, the syllabus, as well as to host class discussion boards. In addition, the University infrastructure was upgraded with technology investments in the classrooms, a Web-based portal system for administrative and student services, and a wireless network that was installed on both campuses. By 2001, the time was ripe to look at consolidating resources to develop and maintain an online presence that could cater to the Concordia community.

Seeing an opportunity to generate additional revenue, the University's administration decided to take the idea one step further and formed a private for-profit company, named eConcordia, whose mandate was to design, develop, and offer e-learning opportunities. Although eConcordia's main market was offering credit courses on behalf of the University, the company also offered non-credit courses and developed online training for small and medium-sized companies. By 2007, eConcordia was offering over 20 credit courses to more than 10,000 students annually, most of who were already registered as full or part-time students at Concordia. Although eConcordia did not offer full online degrees or any graduate-level courses, eConcordia did offer courses that were certified by CISCO and the Forum for International Trade Training.

## ***Participants***

The pool of participants in this study was comprised of undergraduate students who voluntarily enrolled in online courses at Concordia University (offered by eConcordia) during the fall 2007 semester. Although demographic and retention information was gathered for all students enrolled, in order to limit the possible confounders introduced by different instructional designs, the longitudinal portion of this study focused on students enrolled in particular courses. In order to maximize the potential participants, as well as to allow for some comparisons, the individual courses being analyzed were selected for the following reasons:

- They had large enrolment (over 200 students),
- There were no prerequisite courses needed in order to enrol (to ensure that prior knowledge in the subject matter was not required to succeed),
- They made use of similar instructional designs which included multiple media and discussion boards,
- They were designed by the same group of employees (instructional and multimedia designers, programmers, and videographers),
- They had been offered for a minimum of three semesters (a full year) to minimize problems with the content and to ensure that the instructional team had some online teaching experience,
- They made use of an asynchronous communication medium as their main delivery platform (a Web-based course),
- They served as elective courses for the students enrolled in them (they were not core courses that were needed to complete a programme of study),
- They were worth the same amount of credits (three),
- They were offered during a standard 13-week semester and the final exam was written in a supervised environment during the University's final exam period,
- They had deadlines for the submission of assessments (deadlines were not flexible),
- They represented a variety in the subject matter.



Based on these criteria, the following courses were targeted for this study:

- CHEM 208 – Chemistry in our Lives
  - This course is designed as an introduction to chemistry for non-science students. It concentrates on establishing the chemical concepts and vocabulary necessary to understand the many roles chemistry plays in our daily lives.
- FINA 200 – Personal Finance
  - The purpose of this course is to inform students on how they can better manage their current and future financial affairs. It provides the foundation for understanding deeper issues and developing expertise.
- RELI 216 – Encountering World Religions
  - This course serves as an introduction to several religions in the modern world (Judaism, Christianity, Islam, Buddhism and Hinduism). Students explore a number of contemporary contexts wherein people of diverse religious backgrounds have come into contact with one another. Much of the course also hinges on discussion amongst the learners as they share their own views and experiences.

## **Procedure**

There are several sources of data that were used in this study and they were gathered at different points during the semester. This section describes in more detail the instruments that were used, as well as the type of data that was collected.

### ***Archival Data (Registration Information)***

As expressed in the previous chapter, research on retention has traditionally included demographic information in some form or another. These pre-entry characteristics (gender, age, entry GPA, etc...) were often used in an attempt to create a profile of the “successful” (and “unsuccessful”) learner. Although there is no clear consensus as to what role this information plays in predicting retention, one need only recall Tinto’s (1993) statement about all demographic information proving to be significant in affecting attrition at some point or another

in previous retention research. Nonetheless, it is important to include this data in order to properly profile the clientele as a whole. It is this information that will provide answers to the first research question: “Who are the students that are enrolling in online courses?” In addition, this data will allow for comparisons within the university and to the literature, and will aid in determining if the students enrolling in online courses are truly non-traditional learners, as suggested by Kember (1989) and Rovai (2003).

The archival data gathered from the University’s registration system provided two types of information for this dissertation. Firstly, it provided a breakdown of the number of students who voluntarily withdrew from each course offered through eConcordia during the fall 2007 semester. This information was gathered from the class lists at the end of the semester. Secondly, once the final grades had been issued, the detailed registration information for all students enrolled in the three targeted courses was acquired through the University’s registration database.

Information collected from the registration system included:

- A daily report of registration in the courses
  - This allowed for the mapping of the registration patterns throughout the semester.
  - This data was gathered during the dropout period (between the DNE and DISC deadlines).
- Demographic information for each student enrolled in the courses by the DNE deadline (type of variable):
  - Gender (qualitative)
    - Values (2): Male, Female.
  - Age (quantitative)
    - The age of the student is calculated by the registration system at the time of the extraction of the data. Therefore, the age of each individual

was measured at the end of the fall 2007 semester (as of December 20, 2007).

- Values (many), but they were grouped into six age categories: 20 years and under, 21 years-old, 22 years-old, 23 years-old, 24-25 years-old, 26 years and over.
- Cumulative GPA – cGPA (quantitative)
  - Used to measure the performance of the student to date at the University.
  - Since the data is collected at the end of the semester, the cGPA includes the grades received during the fall 2007 semester.
  - Concordia uses a 4.3-point GPA scale.
  - Values (14): DISC (no grade-point), F (0), D- (0.7), D (1), D+ (1.3), C- (1.7), C (2), C+ (2.3), B- (2.7), B (3), B+ (3.3), A- (3.7), A (4), A+ (4.3).
- Grade in the course (quantitative)
  - Measured the performance of the students in the course.
  - Used to identify students who received a “DISC” grade, signifying that they have voluntarily dropped out of the course (no grade is recorded).
  - Students who received an “R”, “NR”, or “FNS” grade were listed as “F” (failed) since they had not voluntarily dropped out of the course and received a GPA of 0 in the course.
  - Students receiving a grade of “PEND” (pending) were removed from the study since they could be awaiting a judgement on a retroactive DNE or DISC in the course.
  - Concordia uses a 4.3-point GPA scale.
  - Values (14): DISC (no grade-point), F (0), D- (0.7), D (1), D+ (1.3), C- (1.7), C (2), C+ (2.3), B- (2.7), B (3), B+ (3.3), A- (3.7), A (4), A+ (4.3).
- Faculty (qualitative)
  - There are four faculties at Concordia University. Students who are not associated to a faculty because they have not been accepted (or have

not applied) to a programme, but who are enrolled in courses for credit, are considered “Independent”.

- Values (5): Arts and Science, John Molson School of Business (JMSB), Engineering and Computer Science (E&CS), Fine Arts, and independent.
- Program preference (quantitative)
  - When students apply to the University, they are asked to rank their programme of preference in case they are not admitted to their first choice.
  - This measure does not include individuals who are not in a programme of study (i.e., independent students).
  - Values (many), but they were grouped into three categories: First choice, Second choice, Third choice or lower.
- Number of university credits completed (quantitative)
  - Measures the amount university-level credits completed by the student by the end of the fall 2007 semester. This measure includes program and non-program students.
  - A standard course is worth three credits.
  - Values (many), but they are grouped into four categories: 30 credits and under, 60 credits and under, 90 credits and under, over 90 credits.
- Student status (qualitative)
  - An undergraduate student who is enrolled in a programme leading to a degree, and who takes a full course load (four or five courses) every semester (except during the summer) is considered a full-time student.
  - An undergraduate student who is enrolled in a programme leading to a degree, but who is taking less than four courses a semester, or who is not enrolled in a programme of study (and are therefore not allowed to take more than four courses a semester), is considered a part-time student.
  - Values (2): Full-time student, part-time student.

- First language (qualitative)
  - Students self-report their first language in their application to the University. Although the majority responded that they were unilingual, several answered that they were bilingual or trilingual.
  - For the purposes of this study, any student who had English as one (or only) first language was identified as “English”, otherwise they were identified as being a francophone or an allophone (“other”).
  - Values (3): English, French, Other.
- Immigration status (qualitative)
  - Used to differentiate between students from Canada and international students.
  - Values (2): Canadian, International.
- Type of program (qualitative)
  - In addition to the “regular” 90-credit programmes, students who did not come to Concordia from the CEGEP system may need to complete additional credits (extended program), or they may be accepted to the University as a mature student.
  - Values (3): Regular, Mature, Extended Program.
- Source (qualitative)
  - Identifies three possible avenues that the student used to come to Concordia University: directly from the province’s CEGEP system, from an international school (outside of Canada), or an alternate source (which includes any out of province school or other university in Canada).
  - Values (3): CEGEP, International, Other.
- CRC score (quantitative)
  - All students who have gone through the province’s CEGEP system are assigned a standardized score that is used by universities to compare and rank applicants. Also known as the “R score”, the “Cote de

rendement collegial” uses the grades from CEGEP, as well as the ones achieved in the last two years of high school, to produce a weighted cumulative average that takes into consideration the performance of the cohort with which they were enrolled (CREPUQ, 2004).

- The CRC score is expressed as a value ranging from 1 (weakest) to 50 (strongest), but in practice, the values tend to fall between 15 and 36.
- Values (many), but they are grouped into five percentile groups (quintiles): under P20 (CRC scores of less than 21.73), P20 to under P40 (CRC scores under 23.71), P40 to under P60 (CRC scores below 25.45), P60 to under P80 (CRC scores under 27.63), P80 and over (CRC scores of 27.63 and up).
- Previous DISC (quantitative)
  - Measures the amount of times that a student has previously dropped out from a course at Concordia University (in-class or online).
  - Values (many), but they are grouped into four categories: 0, 1, 2, 3 or more.

### ***Web-Based Learning Questionnaire***

Whereas the data collected from the registration system can shed some light on the nature of the students enrolling in the online courses, it cannot answer the second research question regarding the reasons why they were enrolling in them. Furthermore, the demographic information will not help to elaborate on their expectations about online courses, the skills they have, or their previous experiences with the medium of delivery.

Therefore, there was a need to develop an instrument that would collect this type of information directly from the source (the online students), and hence the reason why the Web-based Learning Questionnaire (WBLQ) was created. The WBLQ is divided into three distinct parts:

1. "Information about Me" asked the students about their previous experience with online courses, their work commitments during the semester, their experience with computers, their financial constraints, and the level of education of their parents.
2. "My Reasons for Choosing this Course" was composed of questions related to the reasons why they enrolled in the online course, as well as their initial commitment and confidence levels.
3. "My Expectations" measured the initial expectation levels of the students, as well as their impressions about their initial experience with the course.

The WBLQ was influenced by survey questions posed by Garland (1993) regarding potential distance education learning barriers, by the survey used by Bernard et al. (2004b) to predict online learning achievement (through one's "readiness for online learning"), and by a study carried out by Devey (2006) which measured the characteristics, attitudes, and behaviours of students enrolled in online courses. The end result was a 50-item survey in which most questions were answered using a five-point Likert scale (Appendix A).

All students who enrolled in courses with eConcordia were sent an e-mail two weeks into the fall 2007 semester that invited them to participate in this survey. The invitation e-mail explained that the survey was designed to collect data on the reasons why they enrolled in the online course, as well as additional demographic information that could not be extracted from the University database. The students' e-mail addresses were extracted directly from the class lists, which were available through the University's registration system.

In an attempt to humanize the nature of the study and increase participation, a link to a video version of the call for participants was included with the invitation e-mail. The students were informed that upon submitting the questionnaire, they acknowledged that they gave the researcher permission to use their information in the study. The invitation included the researcher's contact information, the reasons for the study, as well as the procedure for opting

out of it. This e-mail was sent to students enrolled in all eConcordia courses and was used as additional information to the retention statistics that were tabulated at the end of the semester.

### ***Weekly (Longitudinal) Survey***

While the WBLQ measured the expectations and attitudes of the online learners early in the course, it could not aid in measuring for changes in these factors during the semester. As suggested by Tinto (1975) in the construction of his original model, there is a need to use a longitudinal methodology in order to understand that changes occur throughout the life of the study. Gottman and Rushe (1993) insist that although two points of data collection will measure the amount of change (i.e., at the beginning and at the end of the data collection period), it will not enable the identification of patterns or trends that could be at the root of the change. This was the reasoning for the collecting of the data at several points during the semester. Since a typical semester lasts 13 weeks, it was decided to create an instrument that would record student attitudes about their online course on a weekly basis.

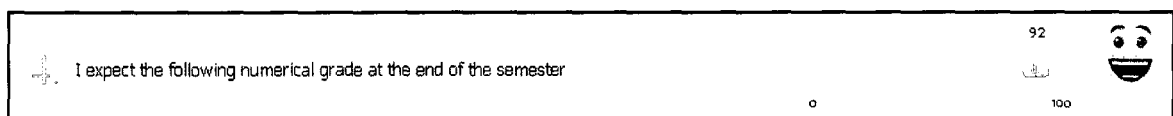
In creating this instrument, it was important to ensure that it be concise and easy-to-answer (i.e., Likert-scale questions), and that it be made available to students at the same times every week in order to help them establish a routine. One of the anticipated challenges was motivating students to complete these surveys, especially if they were experiencing difficulties with the course and possibly considering dropping it. In an attempt to make the experience a little more interesting for the students answering the survey, as well as to increase the precision of the instrument, an interactive slider (with a 0-100 range) was used. This slider would be tied to an “emoticon” that immediately reflected their response (Figure 2). The instrument was customizable in such a way as to allow the researcher to invert the direction of the scale (100 to 0), change the statements used at the extremities of the scale, and turn the scale into a Yes/No or True/False question.



Because the survey was very much a measure of the student's immediate reaction to the online course in a given week, its construction was loosely based on Kirkpatrick's Level 1 evaluation of training programs. According to Kirkpatrick (1979), this type of assessment allows the researcher to gauge the satisfaction levels of the learner by determining their motivation levels and their interest in learning the material. Based on the model proposed by Tinto (1975), the survey also attempted to capture information on the student's perceived level of academic and social integration throughout the course. For example, as suggested by Pascarella and Terenzini (1983), measuring social integration was accomplished, in part, by asking students questions about their interactions with peers, teaching assistants, and the instructor that week.

Since the questions were posed on a weekly basis, it was important that some of them be repeated every week to allow for comparisons and to identify trends, although they were often posed in various orders and/or by using different wording. It was therefore decided that the following questions would be posed regularly:

1. I am happy with my decision to enrol in this course. (Measures overall satisfaction)
2. I expect the following numerical grade at the end of the semester. (Academic integration)
3. I am motivated to continue in this class. (Motivation, as well as intent to drop out)
4. I feel isolated from my classmates. (Social integration)



*Figure 2. Question from Weekly Survey*

The survey presented new questions every week in order to offer some diversification. It also included an opportunity for students to submit their comments and opinions during that particular week. An example of the survey can be found in Appendix B.

Upon the creation of an account to access their online course with eConcordia, a confirmation e-mail was automatically generated and sent to students enrolled in the targeted courses (CHEM 208, FINA 200, and RELI 216) to invite them to participate in the longitudinal portion of the study (Appendix C). This e-mail explained to those individuals that the study would be conducted throughout the semester and that it would measure their attitudes and expectations regarding the course in which they were enrolled on a weekly basis. It was also made explicit that survey participants would remain anonymous throughout the semester, and that they could cease their participation at any time without penalty. As was done with the WBLQ, the e-mail also included a link for the video version of the invitation. In addition to the e-mail, a reminder to students to make a decision regarding the survey (to participate or not) appeared in their portal when they logged in with their new accounts for the first time. Once they made a decision to participate or not, this message box disappeared.

Once the students gave their consent to participate, it was important to get them in the habit of participating early and often. Therefore, a website was created uniquely for the research. The site not only hosted the weekly surveys, but it also presented three annotated links that were updated every week: the "Useful site of the week", the "Fact of the week", and the "Useless site of the week" (Appendix D). The point of the website was to provide a "base of operations"; a webpage that students could bookmark and revisit on a weekly basis to look at the new information, and hopefully, complete the survey for that week.

Furthermore, in order to promote participation, students were informed that they would be eligible to win prizes should they decide to participate. In fact, a system was arranged such that the more surveys they completed, the better the chances they had of winning a prize. Their names would be entered into the draw with each submission (limited to one submission per week). Once students submitted a completed survey (incomplete surveys were not accepted), a feedback page would be shown to the student. This page included the student's name and the number of surveys they had completed up to that point in time, which coincided with the number of entries they had accumulated for the draw.

Another tactic used to encourage participation in the weekly survey was to award a prize early in the process. The winner's name, the course in which they were enrolled, and their hometown, was displayed on the research website so that all survey participants could see it. In addition, a weekly reminder was sent to students via e-mail to inform them that the next survey was open (and that the previous one was about to close). At times the e-mail was accompanied by information about the next prize that would shortly be drawn.

The first survey was launched in the third week of the course, immediately following the DNE date, and the last survey was issued in the final week of the course. In order to minimize researcher bias, especially in intervening on the learner's behalf should they be having difficulty with the course, the information collected by this instrument was collected and analyzed at the conclusion of the semester. It was imperative that the researcher remain neutral throughout this phase of the data collection so as not to influence students who are considering discontinuing the course.

### ***Exit Survey***

One of the primary problems regarding past retention research has been a failure to collect data from the students who have dropped out. As mentioned in the previous chapter, some researchers attempted to explain dropout behaviour by extrapolating from what was known about students who performed well, and/or who had completed the course (Smith, Murphy, & Mahoney, 2003).

Other researchers opted to use whatever information they could from the institution's registration system regarding the dropouts because it was available, easy to access, and it ensured that all students who dropped out would be accounted for. Although the information came from the population of interest, the data collected offered little insight into the reasoning behind the dropout decision since it was mostly descriptive and, therefore, of limited practical use (Tinto, 1975; Bernard et al., 2004b).

One way of collecting this important information was to issue an exit survey to students who had dropped the course. The purpose of this instrument was threefold:

1. To collect some background information.
2. To investigate the reasons why they enrolled in the course.
3. To identify the reasoning behind their decision to withdraw from their course.

In order to help validate the survey, a handful of students who had enrolled in online courses in previous semesters were interviewed and the course evaluations of previous eConcordia offerings were analyzed, especially for the three courses being investigated. This was carried out to determine common factors that could lead to students dropping out of online courses. The data gathered from the students consisted of responses from a mixture of persisters and dropouts since research has shown that both deal with similar stresses throughout the semester (Garland, 1993; Morgan & Tam, 1999). The Exit Survey included several elements that appeared on the WBLQ to allow for comparisons, and was heavily inspired by Garland's (1993) barriers to persistence in distance education.

The Exit Survey also included a section comprised of open-ended questions to allow the students to elaborate on their answers. These questions focused on the individual factors that lead to the dropout decision and were made compulsory to answer (students could not submit the survey otherwise). This was done in an attempt to maximize the amount of responses to the open-ended questions that appeared at the end of the survey. Much like the WBLQ, the survey consisted of three main sections that were designed to collect data on the students' individual backgrounds (online course experience, language proficiency, and employment commitments), on the reasons why they enrolled in the course, and on the reasons why they decided to drop out. The questions posed in the Exit Survey can be found in Appendix E.

An invitation to complete the Web-based Exit Survey was e-mailed to all students who had withdrawn from their online course by the DISC deadline. This e-mail invitation, which was also accompanied by a link to view its video version, explained to students what the study was

about, the importance of their feedback, and that their anonymity would be ensured throughout the process.

Although the return rates of surveys have consistently been a concern (especially with surveys conducted online), the Exit Survey introduces added obstacles that may impede participation. The main challenge facing researchers measuring retention is gathering information from the students who actually drop out. Woodley and Parlett (1983) suggest that exit surveys typically have low response rates since students who have dropped out may want to cut their ties to the institution due to the sense of failure. They also caution that students may offer “post-event rationalizations” for their perceived failure that mask underlying causes, and that the questionnaire design may elicit limited responses. If this were to occur, one would fail to identify the possible range and interplay of the reasons for dropping out. This was the rationale for including open-ended questions in the survey.

However, a low return rate is not the only issue with exit surveys. The use of exit surveys often yields misleading results. For example, Tinto (1993) suggests that although “financial reasons” may be cited as a reason for departure, “these statements are frequently *ex post facto* forms of rationalization” that mask the real reasons leading to the decision to withdraw.

In an attempt to curtail the low response rates, several initiatives were undertaken. Firstly, the invitation e-mail was purposely written with an apologetic tone, as if the university had failed to adequately provide a service to the student. In other words, it sought to solicit their opinions on how the service could have been improved and what could have been done differently in order to retain them. Secondly, in order to personalize the invitation, an e-mail merging utility was used to send individual e-mails addressed to each student. Thirdly, it was also important to keep the survey as concise as possible, and as a final incentive to solicit the maximum amount of respondents, each participant was awarded the chance to win a participation prize.

## ***Researcher***

The primary researcher in this study was also the director of design and development, as well as an instructor of an online course, at eConcordia. Determining the factors that led to student attrition was of interest to the researcher since these results could potentially have a significant impact on the day-to-day operations of eConcordia. It was therefore important that the methodology be designed so as to minimize potential researcher bias that could affect the outcome of the study.

The results of the WBLQ, the Exit Survey, and the responses to the weekly surveys by students in the three chosen courses, were only reviewed once the courses had ended and the final marks were awarded. In addition, any messages (complaints, questions, and comments) that did not involve the study were redirected to the eConcordia helpdesk, which takes care of such inquiries.

In order to identify the students who were enrolled in the targeted courses, as well as those who dropped out of their courses during the semester, the information that was collected from the registration database needed to be used. Only the e-mail addresses of the students were collected so that the invitations to complete the surveys could be sent out. The analysis of the demographic information collected from the registration database was carried out concurrently with the data collected from the surveys at the end of the semester. Therefore, the researcher was unable to intervene or affect the outcome of the study since the fate of the students had already been determined by the time that the data was analyzed.

## **Data Sources**

This dissertation necessitated numerous sources of data, both quantitative and qualitative, in order to explore the dropout phenomenon. Furthermore, this information was collected at different points throughout the fall 2007 semester. The source and the nature of the data used were as follows (Figure 3):

- Archival data
  - Student demographic information was collected through the institution's registration system after the DNE date for all eConcordia students enrolled.
  - Student performance throughout the semester on the various assessments and exams was collected via the grade sheets for the individual courses. This data was collected at the conclusion of the semester once the final grades had been awarded.
  - Course evaluations from the previous semesters, as well as for the current one (fall 2007) were collected and analyzed for all courses.
  - The course outlines for the three targeted courses (CHEM, FINA, and RELI) were also collected and analyzed for their assignment and exam deadlines during the semester.
- Surveys
  - While registering for an account to access their course, students enrolled in specific courses (CHEM, FINA, and RELI) were invited to answer a weekly survey that measured their motivation, self-efficacy, attitude, and perceived performance in the course at that point in time. The first survey was released the week following the DNE deadline and continued until the end of the semester.
  - Students enrolled in all online courses were invited to complete the WBLQ over a 3-week period starting at the DNE deadline. Students were asked about their initial expectations, perceptions, and experiences with online courses and the medium of instruction.
  - All students who have dropped out of their course by the DISC deadline were sent an invitation to complete the Exit Survey.

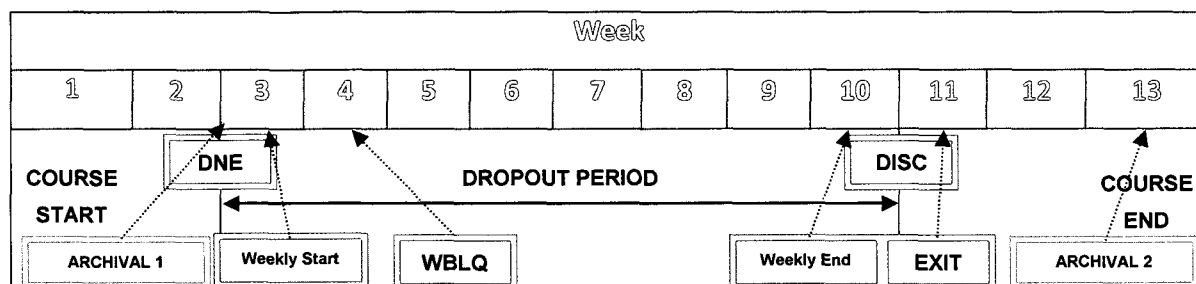


Figure 3. Data Collection Period

## Data Analysis

The following section explains how the data collected from the surveys, the grade sheets, the course evaluations, and the interviews were used to address the research questions that guided this dissertation.

### *Who are the Online Students?*

The first objective of this dissertation was to establish a profile of the students who have enrolled in online courses with eConcordia. This was an important exercise since it would ultimately aid in defining the extent to which the research findings can be generalized. The literature had previously established that the “typical” online learner was older, had more responsibilities with family and at work, and therefore was more likely to encounter obstacles to completing their studies from forces external to the institution (Rovai, 2003). It was therefore suggested that online learners differed from the students who would opt for courses offered in a more traditional format. How does the information collected from the students taking online courses with eConcordia compare? How do they compare to the demographics of the rest of Concordia University, or to results from other studies in online courses (i.e., Bernard et al, 2004b; Devey, 2006)?

An analysis of the results of the WBLQ and the demographic information provided by the University’s registration system, coupled with descriptive statistical techniques, represented the main methods used to help answer some of the aforementioned research questions. Although the registration information provided the most accurate form of demographic information, the



WBLQ results were needed to ascertain the gaps in the data, such as the students' prior online experience, the educational levels of their parents, their educational goals, and their family and work commitments.

### ***Why Students Enrol in and Drop Out of Online Courses?***

The data gathered from the second and third sections of the WBLQ provided the information needed to understand the reasons why the students enrolled in the online courses, their expectations about the course, and their impressions about their experience thus far. Descriptive statistical techniques were used to analyze this particular data.

As previously suggested, gathering information directly from a student who has dropped out, although essential for this dissertation, will pose some problems. Therefore, it was necessary to gather data from a variety of sources in order to ensure that this question could be answered. The results of the WBLQ, the data gathered from the registration system and the Exit Survey served as the main sources for this portion of the data analysis.

Descriptive statistical techniques were used to analyze the data collected from students who responded to the Likert-scale portion of the Exit Survey. The study conducted by Morgan and Tam (1999) provided the method used to code, classify, and analyze the responses to the open-ended questions. While explaining the reasons why they dropped out of their online course, the student responses were coded and categorized into one of the four barriers to distance education course completion identified by Garland (1993). The first three reasons for withdrawing (gathered from the Exit Survey) expressed by the student were pinpointed and coded according to Garland's barriers. The individual reasons given for dropping out were also grouped into common categories for further analysis. Although the data collected was qualitative, it was used to further elaborate on the results of the quantitative data collected by the other instruments.

In addition to the descriptive statistical techniques used on the data collected from the WBLQ and registration information to profile the students who dropped out, comparative statistical techniques such as individual t-tests, one-way ANOVAs, and chi-squared tests for independence, were the primary means used to identify differences amongst the students. In the event of a significant ANOVA test, a *post hoc* analysis using the Tukey HSD method was conducted to determine the source of the discrepancy.

Due to the large enrolment numbers in the three targeted courses, the information gathered from the University's registration database allowed for additional analyses of the dropout phenomenon. This included the presence of interactions amongst the demographic variables and the identification of differences amongst and within the individual courses. In order to investigate these possibilities, a series of MANOVAs and *post hoc* tests were conducted with this data.

### ***When are the Students Dropping Out of Online Courses?***

As mentioned in the literature review, previous studies measuring student retention have used a variety of correlational techniques that attempted to link particular variables to persistence. Tinto's (1975) theory and model was a major contribution to the field since it was the first to attempt to use a longitudinal approach to explain the attrition phenomenon (Pascarella & Terenzini, 1983).

Tinto (1975) called for the use of longitudinal path analysis techniques rather than simpler cross-sectional studies that have limited abilities to predict attrition. He suggested, among other techniques, the use of logit analyses as a means of dealing with a qualitative and categorical dependent variable (persist or drop out) in future studies.

Path analysis is a multivariate method used to identify and quantify direct, indirect, and total effects that a set of variables have on each other. This technique will typically make use of a path diagram to graphically depict the set of structural equations that describe the strength

(beta weights) and the direction of the relationships amongst the variables under study (Mueller, 1996).

However, in order to conduct a proper path analysis, one has to have an idea, prior to conducting the study, of the possible relationships that could exist between pre-identified variables. This would not be a preferred technique for an exploratory study. Another weakness of the technique is that “no statistical comparison can be used to determine which path model is the one that best represents the true structure among the observed variables” (Mueller, 1996).

The problems associated with simple and multivariate linear regression models, especially when dealing with a dichotomous dependent variable, are the possible violations of the basic theoretical assumptions of linear regression. For example, Dey and Astin (1993) point out that in the case of linear regression, it is assumed that the dependent variable is measured on a continuous scale, or in other words, it takes on many possible different values. However, when measuring retention, the dependent variable can only take on two possible values: either the student drops out, or they persist in their studies. Moreover, with a dichotomous dependent variable, the assumption that the errors are randomly distributed cannot be assured (Dey & Astin, 1993). Granted, any procedure that makes a decision about a given phenomena based on limited data is reliant on several assumptions, all of which are open for interpretation and possible inaccuracy, but this problem is magnified when that decision is a dichotomous one (Keppel & Wickens, 2004).

Furthermore, researchers who use multivariate regression techniques do so under the assumption that there are no interaction effects between the independent variables, that there is low multicollinearity (when the independent variables are correlated with others in the model) and, in the case of path analysis, that the arrows are unidirectional (recursive), meaning no feedback looping (Mueller, 1996; Dielman, 2001). Gottman and Rushe (1993) also cautioned

the use of path analysis and other ANCOVA techniques because they are known to “yield completely incorrect conclusions about change”.

Another issue with path analysis is that since it is inherently a “goodness of fit” test, it is based on the premise that a failure to reject the null hypothesis signifies that the model is justified. This means that an increase in the amount of independent variables will increase the overall power of the test, thus making it increasingly difficult to conclude that the constructed model significantly deviates from the norm. This is contrary to other hypothesis tests where the onus is on the researcher to reject the null hypothesis, and an increase in power makes it more difficult to do so.

Dey and Astin (1993) argue that the use of logistic and probit analyses would be more applicable to situations where the dependent variable is dichotomous because they are based on different theoretical assumptions than linear regression. Instead of an independent variable having a proportional positive or negative effect on the dependent measure, as is the case in linear relationships, changes in the levels of the predictor will have different impacts on the probit and logistic curves. In both cases, the impact on the dependent variable is greater at the mid-range of the predictor variable, and these same effects are increasingly less pronounced at the smaller and larger ends of the spectrum (Dey & Astin, 1993). Models built using these techniques are therefore better able to account for interactions amongst the independent variables.

One such statistical technique that makes use of a dichotomous dependent variable is an adaptation of the generalized linear model to binomial data. In this logistic regression model, the independent variables are used to predict the likelihood of one of the two possible outcomes. However, since the goals of this study do not include the prediction of each individual’s likelihood of dropping out of their course, and since the results of this model rarely give a definite answer (0 or 1), but rather something in-between, this method was deemed unsuitable for this situation.

That being said, in a study comparing the three statistical techniques (linear, logit, and probit), Dey and Astin (1993) were unable to find significant differences amongst them, especially when using a large sample. They suggest that the decision of which statistical method to use should therefore hinge more on practical considerations, such as the availability of proper software. However, one must be wary of the fact that this was a comparison of predictive models of student retention which involved a large number of students. It included numerous covariates, many of which did not offer significant correlations, and in each case, the overall models only accounted for roughly 35% of the variance in the study. Dey and Astin (1993) were therefore able to prove that in this particular case, the three techniques were quite comparable in their ineffectiveness at predicting the dependent variable.

Since one of the main goals of this dissertation is to pinpoint particular times during the semester when students are at a higher risk of withdrawing, it is important that the technique employed allow for the segmentation of specific time periods. In this case, since each course spans a typical 13-week semester, the timeline was divided into 13 segments, each representing a week. However, since we are interested in a particular action (dropout) that can only occur between weeks three and ten, the time period in question was narrowed to that range, as demonstrated in Figure 3.

Another issue stems from the fact that over the course of this 13-week semester, one expects that there would be students who will withdraw from the course. Most research methodologies would have to drop the data collected from students who did not complete the course or programme because they would be considered incomplete. Since it was known that both persisters and non-persisters faced the same potential obstacles throughout a course (Garland, 1993; Morgan & Tam, 1999), and since it is in the best interest of any research to maximize the amount of data collected, the statistical method applied should allow for the use of as much data as possible, whether it be from students who dropped out of the course or not.

Longitudinal studies can pose several design and analytic problems for researchers. When dealing with human subjects there will inherently be an increase in the likelihood of the behaviour being studied (in this case, dropping out) the longer the data is collected. There are also additional costs and strain on resources as the study persists, as well as the possibility that the event being investigated will have yet to occur by the time the data collection period ends. In the past, this particular problem was “solved” by researchers using *ad hoc* strategies, for example, dropping certain subjects from the study, clustering the subjects into sub-samples, or assigning an arbitrary score to individuals who have not yet “experienced” the phenomenon under study (Singer & Willett, 1991).

Developments in the field of biostatistics, particularly in studies that attempted to model human lifetimes, have refined a statistical methodology that allowed for the use of a maximal amount of the data collected, both from subjects who experienced the event being studied (in the biostatistics case, it was death), and those who had not (Cox, 1972). In order to use this type of methodology, one needs a situation where a mutually exclusive event (such as a dichotomous variable) could occur at a given point in time, and where the researcher could observe and record the subject experiencing this event if it occurred (Singer & Willett, 1991). The combination of logistic regression, hazard-rate analysis, and partial likelihoods provides researchers with a powerful statistical tool that allows for the modeling of events over a period of time called survivor analysis (Efron, 1988; Agresti & Finlay, 2009).

Based on Cox’s (1972) proportional hazards regression model, survival analysis is a nonparametric statistical technique that allows researchers to model “time-to-event” data, also known as event history analysis (Agresti & Finlay, 2009). In this case, the time it took for a student to withdraw from a particular course (in weeks) reflected the time-to-event. This method is more popular in biological research when studying the death of organisms. For example, in medicine it is used to determine the survival rates of cancer patients after a particular treatment. In engineering, survival analysis is used to determine the time to “failure” of mechanical systems, such as the time until a car engine breaks down. The field of economics

also employs this statistical technique to help determine risk-reward factors. Insurance companies determine rates for life-insurance policies and banks use it to model the retention of clients.

In survival analysis, information for all subjects involved are retained throughout the life of the study, despite the fact that the event, be it death, failure, or drop out, may or may not have occurred. If, by the end of the study, the subject has not experienced the event in question, they are said to be “censored”. In the analysis, censored and uncensored data can be used concurrently to identify the probability of survival given individual characteristics and other covariates. Thus, the term survival probability is used to describe the chance that a subject does not experience the phenomenon being investigated throughout the pre-determined time periods. Its graphical representation, with the time period along the x-axis (t), and the survival rate (S) on the y-axis, is called the survivor function (Equation 1). The survivor function is a key product of survivor analysis as it allows the researcher to quickly determine general patterns in the data.

$$S(t) = \frac{\text{number of individuals surviving longer than } t}{\text{total number of individuals studied}}$$

*Equation 1. The Survival Probability (S) as a Function of Time (t)*

According to Kaplan and Meier (1958), the probability that an individual survives (S) at the end of a given time period (t), given that the individual had not already been censored, can be estimated as the product (denoted by the Greek symbol  $\pi$ ) of a series of conditional probabilities. The series of repeated calculations for each time period can be summarized by the Kaplan-Meier product-limit estimator, as demonstrated in Equation 2, which is used to estimate the survival function (Kalbfleisch & Prentice, 1980).

$$\hat{S}(t) = \prod_{t_i \leq t} \left(1 - \frac{d_i}{n_i}\right)$$

*Equation 2. The Product-Limit Estimator*

*“t” represents the duration of the study to that point in time, “d<sub>i</sub>” represents the amount of individuals who have been censored up to point “i”, and “n<sub>i</sub>” represents the amount of individuals who are at “risk” of dropping out.*

On their own, however, survival functions cannot help researchers isolate probabilities of survival in given time periods. One could ascertain that when the slope of the survivor function is steep, subjects have a greater chance of experiencing the event. However, to be more specific, one would have to isolate a given time period and perform additional analyses. The work of Cox (1970) in transforming the survivor function using logistic regression allowed for more direct estimations of “risk” during a given time period, and Finkelstein (1986) refined the procedure to allow for the use of interval-censored discrete survival analysis.

When depicting the amount of “risk” that a sample, or “risk set”, has in experiencing the event in a given time period, one employs hazard probability and the hazard function (Efron, 1988). Unlike the survivor function, which describes the overall pattern of “survival” throughout the data collection period, the hazard function describes the risk to the survivors over the length of the study. Each individual point in the hazard function only uses data from subjects who are still eligible to experience the event, and each peak describes a moment in time when they are most likely to experience said event.

Since hazard functions portray not only whether an event is likely to occur, but when it is likely to occur, it is that product, and not the survivor function, that “forms the cornerstone of survival analysis” (Singer & Willett, 1993). The cumulative hazard function (H), can be estimated at time “t” by referring to the survival function as shown in Equation 3. However, in this study, it is easier to pinpoint changes in probabilities by using relative hazard rates on a weekly basis, as opposed to a cumulative function.

$$\hat{H}_{(t)} = -\ln(\hat{S}_{(t)})$$

*Equation 3. The Hazard Function*

By using longitudinal data on the teaching careers of 3,941 special educators hired in Michigan between 1972 and 1978, Singer and Willett (1993) demonstrated how discrete-time survival analysis could be employed by educational researchers to determine main effects and interactions in a predictive model to ultimately serve practitioners. The most popular type of



survival analysis is conducted over a continuous time-period, but these do not adapt well to educational settings where the time-to-event is likely to be measured in discrete intervals (i.e., years, semesters, weeks), as opposed to over a lifetime. Singer and Willett (1993) demonstrated that by using a discrete-time survival analysis model, in which the focus is on particular temporal intervals, an educational researcher can overcome this problem.

In this dissertation, the survivor function described the rate of student withdrawal throughout the semester, whereas the hazard function portrayed the probability that the students who remained enrolled in the class after the previous week would decide to drop out in the current one. Although one could collect data and use it retrospectively to reconstruct past events, Singer and Willett (1991) suggest that the “systematic collection of data at regular intervals is far better”. This is because the collection of information after the occurrence of the event, when possible, relies increasingly on the subject’s recollection of the past. Increased reliability can therefore be achieved by collecting data in a prospective manner and, when applicable, it enhances one’s understanding of the circumstances that may have led to the event.

Discrete-time survival analysis assumes the use of independent censoring, meaning that censored and uncensored individuals are treated no differently in the data analysis. An additional assumption of this model is that the subject cannot experience the event more than once. In other words, once a student withdraws from a course, they are unable to do so again. Therefore, for the purposes of this study, subjects who drop, then re-enrol in the course will be excluded from the study.

Singer and Willett (1991) suggest twenty guidelines regarding survival analysis design. These include:

- Properly defining the target population using time-insensitive descriptors.
- Identifying the beginning of time in such a way that it eliminates, or at least minimizes, the possibility of left censoring (when the majority of subjects are censored early)

- Using sample hazard and survivor profiles based on the predictor variables to perform exploratory analyses.
- Including both time-variant and time-invariant variables in the hazard model construction.
- Verifying for the presence of interaction effects between the predictors and time.
- Using fitted survivor and hazard functions to graphically display the main effects of the predictor variables.

The data collected from the registration system was used to construct the initial sample survival and hazard functions for the attrition of students enrolled in the three courses. In order to accommodate the trial period at the beginning of the semester, the analysis was conducted using the weekly registration results as of the DNE deadline. The survival function was therefore comprised of the cumulative proportion of students who “survived” on a given week in their online course. On the other hand, the hazard function depicted the weekly hazard rates (probability of dropping out) for students who were enrolled in course during a given week (also known as the instantaneous failure rate).

Once the initial survival and hazard functions were constructed, univariate analyses of the covariates (i.e., gender, age group, full-time/part-time status, etc...) were carried out using Kaplan-Meier survivor analysis. Significant differences in the retention patterns among the covariates were tested using the Log-Rank (Mantel-Cox) test because it does not make assumptions about the shape of the distribution (it is a nonparametric test), and it assigns equal weight to censored events at all points in time during the study (Peto & Peto, 1972). When comparing two survival functions, the null hypothesis was that there was no difference between them ( $S_1(t) = S_2(t)$  for all  $t > 0$ ), and the alternate hypothesis was that they were not equal at some  $t > 0$ . In order to control for the confounding variables introduced by the individual courses (different deadlines, assessments, instructional design, content, etc...), this analysis was conducted for each course separately, in addition to the overall test.

The weekly survey conducted in the three courses served as a barometer for the satisfaction and motivation levels during a given week. The patterns produced by the responses of these students served as additional information to be mapped with the survivor functions of the individual courses. Although no statistical analyses were conducted on this data per se, it was nonetheless needed to help explain any trends that were identified in the weekly registration, as was the data collected from the other instruments (Exit Survey, WBLQ, grade sheets, and course evaluations).

## RESULTS

This chapter provides a detailed summary of the data collected from the numerous instruments used throughout this study. It will commence with an overview of the demographic information gathered from the students enrolled in undergraduate online courses at Concordia University offered through eConcordia. Following the overview of the students who are enrolled in the online courses, this chapter will present data gathered from other instruments, as well as the results of their statistical analyses. Special emphasis will be paid to the examination and comparison of individuals who dropped out of their online course, specifically via the survival analysis of the demographic information from the registration data, as well as using the results of the Exit Survey and the Web-based Learning Questionnaire.

### Results of the Web-based Learning Questionnaire

#### *Section I: Information about you*

Of the 3852 students enrolled in the 19 undergraduate courses offered by eConcordia during the fall of 2007, 890 answered the Web-based Learning Questionnaire (WBLQ) that was sent out following the DNE deadline<sup>1</sup> date, which constitutes a 23% response rate. Since the results of this survey were gathered before the DISC deadline<sup>2</sup>, the data was collected both from students who persisted, and from those who dropped out of their respective online course.

Students enrolled in CHEM 208 (Chemistry in our Lives) were the most frequent respondents to the WBLQ (17.1% of the participants), followed by INTE 290 (Introduction to Computer Usage and Document Design, 16.6%), FINA 200 (Personal Finance, 8.3%), POLI 298z (Introduction to

---

<sup>1</sup> The DNE deadline, which was on September 18, 2007 for the fall 2007 semester, is the deadline for academic withdrawal from courses without financial penalty.

<sup>2</sup> The DISC deadline, which was on November 6, 2007 for the fall 2007 semester, is the deadline for academic withdrawal without tuition refund.

Governance and Organized Crime, 7.4%), and RELI 216 (Encountering World Religions, 7.1%). These same five courses constituted the most popular courses (number of registered students) from that semester, and in the same order of magnitude.

As shown in Table 1, a gender gap appears amongst the results of the WBLQ. The majority of the participants were female (61.1%). For the most part, students who answered the questionnaire spoke English as their first language (66.2%), which was followed by “Other” (20.6%), and French (13.3%). Most students enrolled in online courses were between 21 and 24 years-old (53.1%). Students under the age of 21 years-old made up 21.7% of respondents, whereas those between 25 and 30 years-old represented 17.2%, and students 31 years of age or older represented the remaining 8.0%.

*Table 1. Demographic Information from WBLQ*

Variable	Frequency	Percent	Cumulative Percent
<i>Gender</i>			
Female	544	61.1	61.1
Male	346	38.9	100.0
<i>First Language</i>			
English (Anglophone)	589	66.2	66.2
French (Francophone)	118	13.3	79.4
Other (Allophone)	183	20.6	100.0
<i>Age Group</i>			
20 and under	193	21.7	21.7
21-24	473	53.1	74.8
25-30	153	17.2	92.0
31 and over	71	8.0	100.0

There was much more homogeneity with regards to the university experience of the participants, as shown in Table 2. Freshmen made up 22.8% of the online student body, 23.0% of students had completed one year of university, 23.4% had completed two years, and 19.8% had finished three years. Students who had completed at least four years of university comprised the remaining learners (11%).

Of the students enrolled in online courses during the fall 2007 semester, almost half of them were experiencing this medium of instruction for the first time (44.7%). A total of 21.2% had taken one university-level online course in the past, 14.2% had taken two courses, 9.7% had completed three, and 10.2% had completed four or more online courses.

As displayed in Table 2, the majority of students who answered the survey were enrolled in at least four courses that semester (62%), meaning that the remainder (38%) were part-time students. Further breaking down the part-time students, 15.2% were taking three courses that semester, 10.8% were enrolled in two courses, and the remaining 12% were enrolled in the single online course that semester.

Although more females responded to the WBLQ, there was no difference between the genders with regards to their student status at Concordia. A similar proportion of males and females were enrolled at the university as full-time (61.8% for men, 62.1% for women) and part-time students (38.2% for men, 37.9% for women).

*Table 2. Previous Experience*

Experience	Frequency	Percent
<i>Years of University</i>		
0	203	22.8
1	205	23.0
2	208	23.4
3	176	19.8
4+	98	11.0
<i>Previous Online Courses</i>		
0	398	44.7
1	189	21.2
2	126	14.2
3	86	9.7
4+	91	10.2
<i>Number of Current Courses</i>		
1	107	12.0
2	96	10.8
3	135	15.2
4+	552	62.0

Table 3 depicts the amount of time (self-reported) that the students estimated they spent on a computer in a typical week before they enrolled in the online course. Two distinct categories are shown: using a computer for educational purposes, and using a computer for non-educational purposes.

Overall, 2.9% of the students admitted that before they enrolled in the online course they did not use a computer for educational purposes whatsoever. A total of 8.4% of the participants estimated that they used a computer for only one hour a week, 47.2% said 2 to 5 hours, 25.7%

spent 6 to 10 hours, and 15.7% figured that they were using a computer for at least ten hours a week for educational purposes.

Only 0.1% of the students responded that they did not use a computer for non-educational purposes before enrolling in the online course. 6.3% said one hour a week, 31.7% responded 2 to 5 hours, 30.2% estimated 6 to 10 hours, and 31.7% figured that they were on a computer for at least ten hours a week for non-educational purposes.

*Table 3. Computer Usage by Students Before Enrolling in Online Course*

Hours	Educational	Non-Educational
0	2.9%	0.1%
1	8.4%	6.3%
2-5	47.2%	31.7%
6-10	25.7%	30.2%
>10	15.7%	31.7%

As Table 4 shows, about three-quarters of the students enrolled in online courses were employed during a typical school week. A total of 15.2% claimed to work over 35 hours a week (full-time), whereas 8.9% of the students enrolled in courses at eConcordia worked 1-9 hours a week, 29.8% worked between 10 and 20 hours, and 21.1% worked 21-34 hours a week.

*Table 4. Hours of Employment*

Hours of Work	Frequency	Percent
0	223	25.1
1-9	79	8.9
10-20	265	29.8
21-34	188	21.1
35 and over	135	15.2

With regards to academic aspirations, the results of the WBLQ (Table 5) indicated that the most popular educational goal was to obtain a Master's degree (41.3%), followed by a Baccalaureate (35.6%), a graduate diploma (11.9%), a Doctorate (9.3%), and a certificate (1.0%). The remaining survey participants (0.8%) were not interested in obtaining an academic degree of any kind. In other words, the majority of the students enrolled in the online courses aspired to a graduate degree (62.5%), and just about all students aimed to achieve some sort of university degree (99.2%).

Table 5. Educational Goal

<i>Educational Goal</i>	<i>Frequency</i>	<i>Percent</i>
No degree	7	0.8
Certificate	9	1.0
Baccalaureate	317	35.6
Graduate Diploma	106	11.9
Masters	368	41.3
Doctorate	83	9.3

As Table 6 shows, more than half of the parents of the students who responded to the WBLQ had completed post-secondary education. Among the mothers, only 7.2% had not completed high school, 30% had obtained a high school diploma, 23.6% had completed college (or CEGEP), 30% had obtained university degrees, and the remaining 9.2% had gone on to graduate school.

Similarly, among the fathers, 9.5% had not completed high school, 24.3% had obtained their high school diploma, 20.5% had completed some form of college, 30.8% had a university degree, and 14.9% had graduate schooling. According to the results, the fathers seemed to be slightly more educated than the mothers as a higher percentage had obtained a graduate degree.

There was a slight, but statistically significant difference between males and females as it pertained to their parents' education. A higher proportion of males tended to have parents who had completed a post-secondary degree,  $\chi^2_{(2, N = 811)} = 10.55, p < .01$ . In fact, 58% of the male students had both parents who had completed a post-secondary degree, compared to 47% for the females. This gender difference was also present when investigating mothers and fathers separately.

Although no main effect found using an ANOVA between parents' education and a students' educational goal ( $F_{(8,802)} = 1.74, p = .110$ ), a statistically significant linear correlation existed between these variables,  $r_{(811)} = .088, p = .012$ . In other words, there was a slight positive relationship between the academic aspirations of the students and the educational level of their parents. There was also a strong positive correlation between the level of education of the mother and the father,  $r_{(811)} = .568, p < .01$ .



Table 6. Level of Education of the Parents

Highest Educational Level	Mother	Father
Grade 8 or less	7.2%	9.5%
High school diploma	30.0%	24.3%
College/CEGEP	23.6%	20.5%
University Degree	30.0%	30.8%
Grad school	9.2%	14.9%

Note: Mother (29 missing), Father (70 missing), N = 890

The final demographic variable measured in the WBLQ was the perceived financial burden of attending school. As demonstrated in Table 7, the majority of the students who responded had some sort of responsibility for the cost of their schooling. For instance, 21.2% responded that they shouldered the full financial burden for their schooling. Others received financial assistance from the government, scholarships, or a tuition waiver (21.1%), or they received help from their parents or sponsor (19.2%). The most popular way of financing one's schooling was directly from the parents or sponsor (35.2%). A small proportion of students had assistance from their employer to pursue their studies (2%), and the remaining 1.2% cited alternative forms of financing.

Table 7. Financial Burden

Financial Burden	Frequency	Percent
Entirely on Student	189	21.2
Student with non-family assistance (scholarships, tuition waiver, government)	188	21.1
Student with help from parents/sponsor	171	19.2
Parents/Sponsor (not on student)	313	35.2
Work (not on student)	18	2.0
Other (not on student)	11	1.2

No main effects were identified, when controlled for gender, for student status (part-time vs. full-time), hours of work, financial burden, age, first language, previous university experience, or previous experience with online courses. The only significant difference between the genders was that males tended to be more active on the computer for non-educational purposes than females,  $\chi^2_{(2, N = 890)} = 25.54, p < .01$ .

Students enrolled at Concordia University on a full-time basis tended to spend more time on the computer for educational purposes than part-time students,  $\chi^2_{(2, N = 890)} = 31.85, p < .01$ , and

although this was also true for non-educational computing, the difference was not statistically significant,  $\chi^2_{(2, N = 890)} = 3.14, p = .208$ .

A more noteworthy difference between the two groups of students was that full-time students tended to have more financial aid than part-time students, the latter thereby shouldering the majority of the financial burden,  $\chi^2_{(2, N = 890)} = 34.24, p < .01$ . As seen in Table 8, of the students enrolled on a full-time basis, 84.8% had some sort of financial aid, compared to 69.0% for part-time students. As Figure 4 demonstrates, the more the financial burden falls on the student, the higher the proportion of students who work during the school year. No significant difference was found between the genders regarding financial burden,  $\chi^2_{(2, N = 890)} = 2.66, p = .265$ .

Table 8. Financial Burden for Full-Time and Part-Time Students

Financial Burden	Full-Time %	Part-Time %
Entirely on Student	15.2	31.1
Student with assistance	41.5	38.5
Not on Student	43.3	30.5

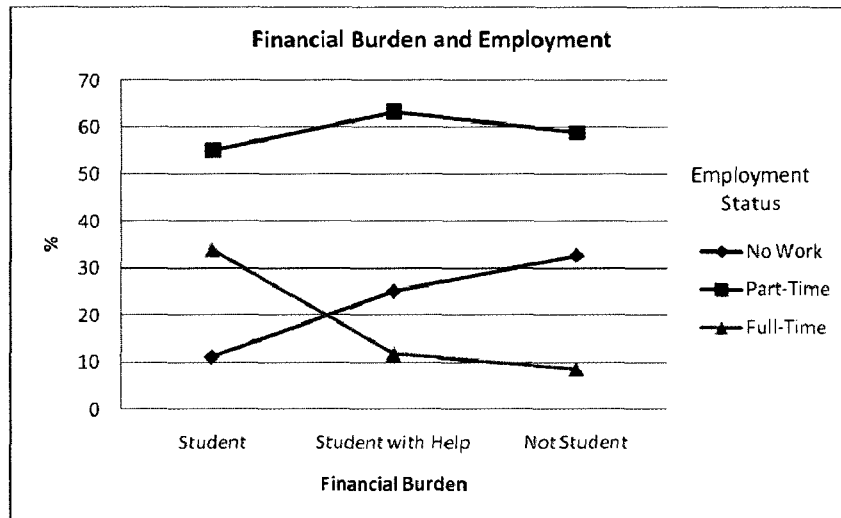


Figure 4. Financial Burden and Employment Status

Part-time students also tended to have been at University for a longer period than full-time students. A total of 16.3% had at least 4 years of university experience, compared to 7.8% for the full-timers,  $\chi^2_{(2, N = 890)} = 3.14, p < .01$ . However, as displayed in Figure 5, there was a higher proportion of full-time students who enrolled in online courses in their third year than part-time

students. There was a steady decline in the proportion of full-time students enrolling in online courses afterwards. No differences were found between the full and part-time students with regards to previous experience in online courses,  $\chi^2_{(4, N = 890)} = 3.03, p = .552$ .

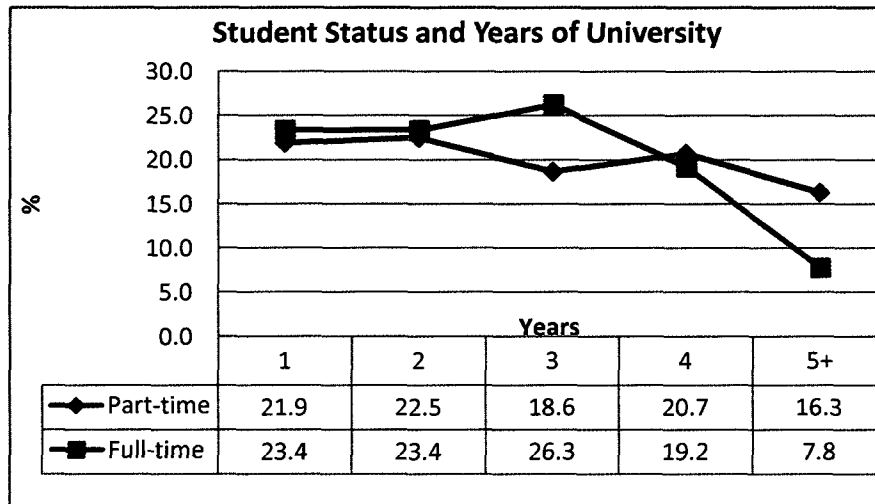


Figure 5. Enrolment by Student Status and Years in Programme

A statistically significant main effect was found between part-time and full-time students with regards to their work status,  $\chi^2_{(2, N = 890)} = 107.70, p < .01$ . As seen in Table 9, 83.5% of students enrolled on a part-time basis worked during the academic semester, with 30.8% doing so on a full-time basis. Of the students enrolled in at least four courses at the University, 5.6% worked full-time and 30.3% did not work at all. In other words, there were twice as many full-time students who did not work when compared with part-timers. Furthermore, the proportion of part-time students who worked full-time was six times greater than that of full-time students. No significant differences were found between employment status and gender,  $\chi^2_{(2, N = 890)} = 1.40, p = .496$ .

Table 9. Employment Status for Full-Time and Part-Time Students

Work	Full-Time Student %	Part-Time Student %
No Work	30.3	16.5
Part-Time Work	64.1	52.7
Full-Time Work	5.6	30.8

Another significant difference was found with the age of the students who were enrolled on a full and part-time basis. Namely, part-time students tended to be older than those enrolled on a full-time basis,  $\chi^2_{(3, N = 890)} = 86.49, p < .01$ . According to the results displayed in Table 10, 41.1% of the part-time students were at least 25 years of age, compared with 15.4% for full-time students. Moreover, 27.5% of full-time students were under the age of 21, more than double the proportion of part-timers in that same age category (12.1%).

*Table 10. Age Group of Full-Time and Part-Time Students*

Age Group	Full-Time %	Part-Time %
Under 21 years-old	27.5	12.1
21 to 24 years-old	57.1	46.7
25 to 30 years-old	11.8	26.0
31 years-old and over	3.6	15.1

A chi-squared test for independence proved to be statistically significant for student age group and the number of courses that they were enrolled in,  $\chi^2_{(15, N = 890)} = 126.6, p < .01$ . The younger the student, the more courses they were likely to be enrolled in, and consequently, the higher the probability that they were to be a full-time student.

It was also found that the older the student, the more likely they were to be responsible for the financing of their own studies,  $\chi^2_{(6, N = 890)} = 110.70, p < .01$ . For example, of the students who did not have any financial responsibility for their schooling, 88.3% were under the age of 25. In contrast, of the students who bore the full financial burden of their studies, 46% of them were at least 25 years-old.

## ***Section II: My Reasons for Choosing this Course***

Section II of the Web-based Learning Questionnaire polled the students on the reasons why they enrolled in the online course, as well as on their confidence in their choices. The results of the five-point Likert scale questions are displayed in descending order of the mean scores in Table 11, with a score of 4 indicating that respondents “strongly agreed” with the statement, and a result of 1 representing that they “strongly disagree”. The “no opinion” answers were purposely omitted from the calculations so as not to skew the statistics.

As seen in Figure 6, a clear majority of the students responded that they enrolled in online courses because of the flexibility it gave them with their scheduling (95.1%), followed by the fact that they enjoyed the idea of working at their own pace (89.3%). Students also enrolled in the Web-based course because they were genuinely interested in the subject matter (79.9%), because it cut on their travelling to and from the school (78.9%), and because they were confident in their computer skills (74.4%).

About half of the students indicated that they enrolled in the course because it was recommended to them (48.6%). Possibly related to that finding, several students admitted that they enrolled in the online course because they were looking for an easy elective (39.3%), or because they thought that enrolling in an online course would be easier than taking one in the classroom (37.7%). The remaining 17.3% answered that the course was required for a programme (either the one they were in, or one that they wanted to get into). A positive correlation was found between students who enrolled in the course because they sought an easy elective and those who responded that the course was recommended to them,  $r_{(750)} = .205$ ,  $p < .01$ .

Almost one-third of the survey participants replied that they enrolled in the online course because of commitments they had at home (31.6%). No main effect was found between males and females as it pertained to enrolling in the online course because of commitments at home,  $M_M = 2.12$ ,  $SD_M = 0.96$ ,  $M_F = 2.16$ ,  $SD_F = 0.96$ ,  $t_{(845)} = 0.68$ ,  $p = .499^3$ . However, a higher proportion of students who were enrolled in their programme of study on a part-time basis acknowledged that responsibilities at home were a determining factor in enrolling in online courses than those taking a full course load,  $M_{PT} = 2.35$ ,  $SD_{PT} = 1.01$ ,  $M_{FT} = 2.02$ ,  $SD_{FT} = 0.91$ ,  $t_{(845)} = 4.95$ ,  $p < .01^4$ .

---

<sup>3</sup> M = Male, F = Female

<sup>4</sup> FT = Full-Time Student, PT = Part-Time Student

This section of the WBLQ also measured the confidence of the students enrolled in the online course. It was found that the learners were very confident in their career path (84.7%), in the course they chose (81.6%), and in their programme of study (81.4%). As for the importance of graduating from Concordia, 70.7% responded favourably, and 54.1% admitted that attending university put them in some sort of financial strain.

However, it should be noted that there was a statistically significant negative correlation between the level of education of the parents and the self-reported student's financial strain,  $r_{(775)} = -.125, p < .01$ . In other words, the more highly educated the parents, the more likely that they were involved in paying their child's tuition, thereby reducing the student's financial strain.

Although no difference was found between males and females pertaining to their confidence in the programme in which they were enrolled, a higher proportion of males expressed confidence in their career choice than females,  $M_M = 3.16, SD_M = 0.72, M_F = 3.05, SD_F = 0.72, t_{(816)} = 2.10, p = .036$ , as well as in their computer skills,  $M_M = 3.07, SD_M = 0.81, M_F = 2.86, SD_F = 0.81, t_{(806)} = 3.53, p < .01$ . However, females tended to put more importance on graduating with a university degree than males,  $M_M = 2.72, SD_M = 0.88, M_F = 2.89, SD_F = 0.78, t_{(748)} = 3.49, p < .01$ .

Also of interest was the fact that students who had prior experience with online courses had scored higher with the statement that they had enrolled in the course because of the confidence they had in their computer skills<sup>5</sup> ( $M_E = 3.01, SD_E = 0.77, M_{NE} = 2.86, SD_{NE} = 0.87, t_{(806)} = 2.56, p = .011$ ), and because they were interested in the subject matter ( $M_E = 3.03, SD_E = 0.74, M_{NE} = 2.91, SD_{NE} = 0.82, t_{(834)} = 2.05, p = .041$ ). But for students who had prior university experience, the main difference was that they were more likely to have enrolled in the online course because they sought an easy elective,  $M_E = 2.35, SD_E = 0.91, M_{NE} = 2.16, SD_{NE} = 0.85, t_{(833)} = 2.59, p = .010$ .

---

<sup>5</sup> E = with previous experience, NE = no previous experience

Table 11. Results of Section II of WBLQ

Variable	M	SD
<i>Reasons for Choosing Online Course</i>		
Flexibility in scheduling	3.47	0.63
Ability to work at own pace	3.23	0.69
Minimize travelling to school	3.14	0.88
Subject is interesting	2.98	0.78
Confidence in computer skills	2.94	0.82
University is a financial strain	2.56	0.96
Course was recommended	2.44	0.92
Expect online to be easier	2.31	0.82
Wanted an easy elective	2.31	0.90
Commitments at home	2.15	0.96
Required for programme	1.75	0.92
<i>Confidence in Academic Choices</i>		
Confidence in career	3.09	0.72
Confidence in programme	3.03	0.76
Confidence in the course	3.01	0.73
Importance of graduation	2.82	0.82

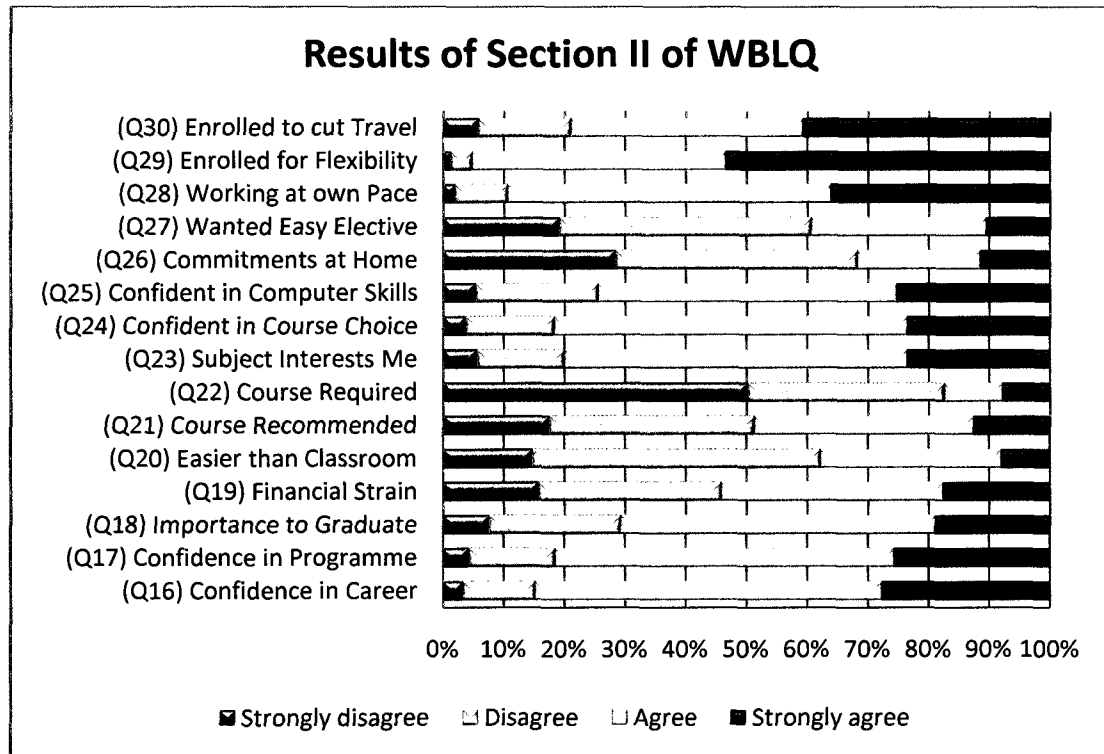


Figure 6. Results from Section II of WBLQ

### ***Section III: My Expectations***

The third and final section of the WBLQ examined the student's expectations at the onset of the course. At this point in time, the learners had had a chance to experience a few weeks of their online course and had officially passed the "DNE" deadline, meaning that they could no longer drop the course without penalty. Therefore, this section of the survey also polled students on their initial experiences and attitudes about the online course. The results of the 4-point Likert scale are displayed in descending order of the mean scores, with a score of 4 indicating that respondents "strongly agreed" with the statement, and a result of 1 representing that they "strongly disagree" (Table 12). Once again, the "no opinion" answers were purposely omitted from the calculations so as not to skew the statistics.

With regards to expectations at the onset of the online course, 88.3% of the students expected the medium of instruction to offer a more flexible study environment compared to face-to-face courses (Figure 7). Moreover, of the WBLQ respondents, 84.0% expected to do well in the course and 79.0% expected no trouble adapting to the self-pacing environment. A total of 78.0% of the students expected to have ample time to devote to the course throughout the semester, 70.7% expected the online environment to be just as structured as in a classroom environment, and slightly more than half of the students surveyed expected to be actively communicating with the instructor (51.4%).

On the other hand, 36.7% of the respondents admitted that they expected the course to be easier because it was offered online. In addition, 34.7% of the students expected fewer readings in their online course, 33.5% expected to be actively communicating with their classmates, and 27.9% expected more homework than similar classroom-based courses. Finally, 10.4% of the students answered that they expected to drop the course if they performed poorly on their first assessment.

This portion of the survey also investigated initial attitudes about the course after the students had had a few weeks to experience the online environment. Of the respondents, 78% felt that



their chance of succeeding in the course was a direct result of their actions. The discussion board was being used by 59% of the students to post and read messages, 58.9% of the students were receiving timely feedback from their instructional team, and 57.3% replied that they were not having trouble finding time to devote to the course.

Students admitted that they had to alter their study habits in 53.8% of the cases. In 42.8% of the cases, students felt as though they were part of a class (even though it was offered online), and 39.4% felt that the course was taking less time than others they have previously taken. Finally, 21.7% of the respondents indicated that they had to learn new computer skills during the course, and 8.1% admitted that they were already considering dropping the online course.

As far as differences between genders were concerned, males tended to have more confidence in their expectations and their performance in the online course ( $M_M = 3.06$ ,  $SD_M = 0.62$ ,  $M_F = 2.96$ ,  $SD_F = 0.66$ ,  $t_{(781)} = 2.26$ ,  $p = .024$ ), made less use of the discussion board to communicate with the class ( $M_M = 2.45$ ,  $SD_M = 0.88$ ,  $M_F = 2.62$ ,  $SD_F = 0.83$ ,  $t_{(822)} = 2.86$ ,  $p < .01$ ), felt that the course was taking less time than others they were taking ( $M_M = 2.42$ ,  $SD_M = 0.85$ ,  $M_F = 2.22$ ,  $SD_F = 0.80$ ,  $t_{(815)} = 3.41$ ,  $p < .01$ ), and had less confidence that their performance was the direct result of their actions ( $M_M = 2.82$ ,  $SD_M = 0.84$ ,  $M_F = 2.97$ ,  $SD_F = 0.69$ ,  $t_{(789)} = 2.79$ ,  $p < .01$ ).

Noteworthy differences between students studying full-time and those who were not included the fact that a higher proportion of part-time students felt as though they were part of the class ( $M_{PT} = 2.43$ ,  $SD_{PT} = 0.82$ ,  $M_{FT} = 2.22$ ,  $SD_{FT} = 0.82$ ,  $t_{(806)} = 3.38$ ,  $p < .01$ ), and more full-time students expected the course to be easier because it was offered online ( $M_{PT} = 2.20$ ,  $SD_{PT} = 0.77$ ,  $M_{FT} = 2.36$ ,  $SD_{FT} = 0.78$ ,  $t_{(842)} = 2.81$ ,  $p < .01$ ), and expected fewer readings ( $M_{PT} = 2.19$ ,  $SD_{PT} = 0.85$ ,  $M_{FT} = 2.31$ ,  $SD_{FT} = 0.82$ ,  $t_{(851)} = 2.05$ ,  $p = .041$ ).

Among these measures, a higher proportion of students with no previous university experience ( $M_E = 2.73$ ,  $SD_E = 0.80$ ,  $M_{NE} = 2.46$ ,  $SD_{NE} = 0.86$ ,  $t_{(855)} = 4.00$ ,  $p < .01$ ), as well as those with no previous experience in online courses ( $M_E = 2.64$ ,  $SD_E = 0.83$ ,  $M_{NE} = 2.42$ ,  $SD_{NE} = 0.86$ ,  $t_{(855)} = 3.94$ ,

$p < .01$ ), responded that they had to make changes to their study habits when compared to students who had prior experience. A need to learn new computer skills was also expressed by students without prior online ( $M_E = 1.73$ ,  $SD_E = 0.82$ ,  $M_{NE} = 2.01$ ,  $SD_{NE} = 1.00$ ,  $t_{(863)} = 4.51$ ,  $p < .01$ ), or university experience ( $M_E = 1.80$ ,  $SD_E = 0.88$ ,  $M_{NE} = 2.06$ ,  $SD_{NE} = 1.03$ ,  $t_{(863)} = 3.55$ ,  $p < .01$ ).

In addition, students with no previous online experience had expected fewer readings ( $M_E = 2.20$ ,  $SD_E = 0.82$ ,  $M_{NE} = 2.34$ ,  $SD_{NE} = 0.85$ ,  $t_{(851)} = 2.40$ ,  $p = .017$ ), and did not feel as much a part of the class as those who had taken online courses before ( $M_E = 2.38$ ,  $SD_E = 0.80$ ,  $M_{NE} = 2.20$ ,  $SD_{NE} = 0.85$ ,  $t_{(851)} = 851$ ,  $p = .017$ ).

For students with no previous university experience, a higher proportion felt that their actions had a direct influence on their performance in the course ( $M_E = 2.88$ ,  $SD_E = 0.78$ ,  $M_{NE} = 3.01$ ,  $SD_{NE} = 0.67$ ,  $t_{(789)} = 2.01$ ,  $p = .044$ ) and more expected to drop the class if they had a poor showing on the first class assessment ( $M_E = 1.74$ ,  $SD_E = 0.75$ ,  $M_{NE} = 1.58$ ,  $SD_{NE} = 0.64$ ,  $t_{(822)} = 2.57$ ,  $p = .010$ ).

Table 12. Results of Section III of WBLQ

Variable	M	SD
<i>Expectation</i>		
It will provide more flexibility	3.17	0.67
To do well	3.00	0.64
No problems adapting to self-pacing	2.94	0.70
My actions have a direct impact on my success	2.91	0.75
Ample time to devote to it	2.87	0.62
Just as structured as classroom	2.86	0.76
To communicate with the instructor	2.55	0.80
Easier course	2.30	0.78
Fewer readings	2.26	0.83
To communicate with fellow students	2.24	0.77
More homework	2.21	0.71
Drop the course if first test is poor	1.70	0.73
<i>Attitude/Situation</i>		
Having no trouble finding time for the course	2.62	0.79
Using the discussion board to communicate	2.56	0.85
Feedback is timely	2.53	0.91
Needed to adjust study habits	2.52	0.84
Feel as part of the class	2.30	0.83
Course taking less time than others	2.30	0.83
Had to learn new computer skills	1.86	0.92
Considering dropping the course	1.51	0.72

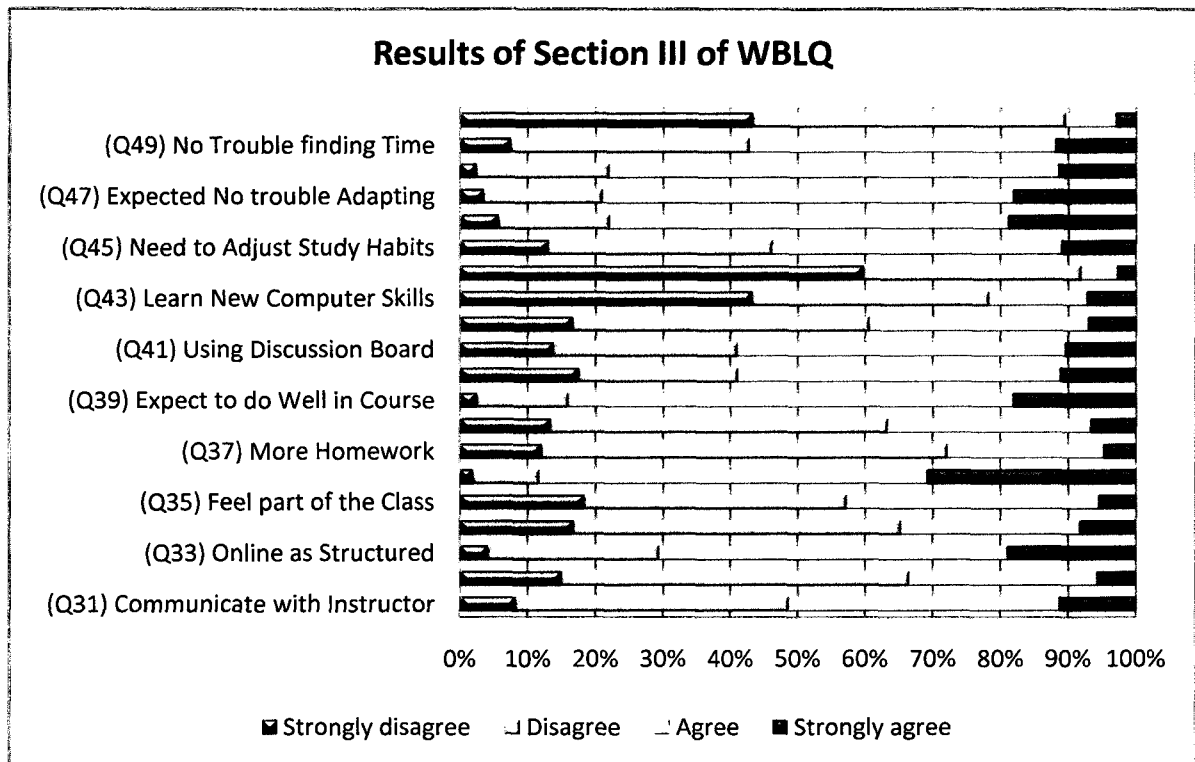


Figure 7. Results of Section III of WBLQ

### ***Dropout from WBLQ Respondents***

Of the 890 respondents to the WBLQ, a total of 41 dropped out of their online course by the DISC deadline. This meant that of the survey participants, a total of 849 persisted in their course, for a 95.4% retention rate (or 4.6% attrition rate). The students who eventually withdrew from their online course were isolated and compared to those who persisted. The results of this comparative analysis are presented in the following section.

### **Section I: Demographics**

As Table 13 reveals, a gender difference was identified amongst the dropouts. It was found that a significantly larger proportion of women withdrew from their online course using an independent samples t-test<sup>6</sup>,  $M_M = .03$ ,  $SD_M = .16$ ,  $M_F = .06$ ,  $SD_F = .24$ ,  $t_{(888)} = 2.28$ ,  $p = .023$ .

<sup>6</sup> Dropout coded as "1", persistence coded as "0".

In addition, a greater proportion of part-time students discontinued their course as compared to the full-time students,  $M_{PT} = .08$ ,  $SD_{PT} = .27$ ,  $M_{FT} = .03$ ,  $SD_{FT} = .16$ ,  $t_{(888)} = 8.23$ ,  $p < .01$ . Moreover, a one-way ANOVA comparing attrition to the number of courses in which they were enrolled determined the existence of a main effect,  $F_{(3,886)} = 8.05$ ,  $p < .01$ . A Tukey HSD *post hoc* test determined that students who responded that they were enrolled in two courses during the fall 2007 semester (at least one of them being online) had a higher dropout rate than students taking one, three, or a full-time course load. This phenomenon was replicated among female students,  $F_{(3,540)} = 10.30$ ,  $p < .01$ , but not among the males,  $F_{(3,342)} = 0.65$ ,  $p = .585$ .

According to the results, 2.5% of the students who were enrolled in four or more courses dropped out by the end of the semester (97.5% retention). Students enrolled in a single course had an attrition rate of 5.6%, those taking two courses dropped out of their online course 13.5% of the time, and students taking three courses had a 5.9% dropout rate.

No significant differences were found between the dropouts and persisters with regards to their first language using a one-way ANOVA,  $F_{(2,887)} = 1.38$ ,  $p = .252$ , or their age group,  $F_{(3,886)} = 1.12$ ,  $p = .338$ , despite the fact that it seemed that students in the eldest age group had a much higher dropout rate than the youngest one.

In addition, no main effect was identified amongst the employment status of the students,  $F_{(2,887)} = 0.79$ ,  $p = .455$ , nor between students who were employed on a part-time and full-time basis,  $F_{(1,665)} = 1.56$ ,  $p = .213$ , with regards to discontinuing their online course. In other words, one's employment status did not seem to have an effect on the chances of dropping out of an online course.

According to the results displayed in Table 14, no main effect was detected amid the persisters and the dropouts based on their previous online experience,  $F_{(1,888)} = 1.39$ ,  $p = 0.239$ , or the amount of years of university experience,  $F_{(1,888)} = 0.18$ ,  $p = .894$ . The amount of time spent on the computer, whether it was for educational purposes ( $F_{(2,887)} = 0.40$ ,  $p = .961$ ) or not ( $F_{(2,887)} =$

for educational purposes ( $F_{(2,887)} = 0.40, p = .961$ ) or not ( $F_{(2,887)} = 0.26, p = .774$ ), did not seem to influence dropout behaviour, nor did the perceived financial burden of attending university,  $F_{(2,887)} = 1.42, p = .243$ .

Table 13. Dropout by Demographic Variable

Variable	Persisted	Dropped Out
<i>Gender</i>		
Female*	512 94.1%	32 5.9%
Male	337 97.4%	9 2.6%
<i>Student Status</i>		
Full-Time	538 97.5%	14 2.5%
Part-Time**	311 92.0%	27 8.0%
<i>First Language</i>		
English	561 95.2%	28 4.8%
French	110 93.2%	8 6.8%
Other	178 97.3%	5 2.7%
<i>Age Group</i>		
Under 21	187 96.9%	6 3.1%
21 to 24	451 95.3%	22 4.7%
25 to 30	146 95.4%	7 4.6%
31 and over	65 91.5%	6 8.5%
<i>Employment Status</i>		
No Work	213 95.5%	10 4.5%
Part-Time Work	510 95.9%	22 4.1%
Full-Time Work	126 93.3%	9 6.7%

Note: Significantly greater proportion of attrition,  $p < .01^{**}$ ,  $p < .05^{*}$

A MANOVA confirmed the fact that an interaction effect existed for dropout between full-time and part-time students when controlled for gender,  $F_{(1,886)} = 3.90, p = .048$ . An independent t-test concluded that a significantly larger proportion of women who studied part-time dropped out than those who studied full-time,  $M_{PT} = 0.11, SD_{PT} = 0.31, M_{FT} = 0.03, SD_{FT} = 0.17, t_{(542)} = 3.75, p < .01$ . However, this gap was not found among male students,  $M_{PT} = 0.04, SD_{PT} = 0.19, M_{FT} = 0.02, SD_{FT} = 0.14, t_{(344)} = 1.09, p = .277$ .

When investigating part-time students, a gender gap was discovered using an independent samples t-test as a higher proportion of women studying part-time dropped out of their online course than part-time males,  $M_M = 0.04$ ,  $SD_M = 0.19$ ,  $M_F = 0.11$ ,  $SD_F = 0.31$ ,  $t_{(336)} = 2.29$ ,  $p = .023$ . But no difference was found between the genders among full-time students,  $M_M = 0.02$ ,  $SD_M = 0.14$ ,  $M_F = 0.03$ ,  $SD_{FT} = 0.17$ ,  $t_{(550)} = 0.79$ ,  $p = .429$ .

No gender differences were found regarding dropout amid students who did not work,  $F_{(1,221)} = 0.59$ ,  $p = .445$ , nor among those who were employed on a part-time basis,  $F_{(1,530)} = 1.23$ ,  $p = .279$ . However, more women who worked full-time ended up dropping out of their online course than men,  $F_{(1,133)} = 5.46$ ,  $p = .021$ . In fact, of the females who worked full-time ( $n = 87$ ), a total of 9 dropped out (10.3% attrition), whereas of the 48 men who worked full-time, none withdrew from their online course (0% attrition).

Although the finding was not found to be statistically significant, students who dropped out had fathers with a higher average education than those who persisted,  $F_{(1,818)} = 1.30$ ,  $p = .255$ . Similarly, it was found that an individual with a more educated mother was more likely to withdraw from their online course,  $F_{(1,849)} = 3.86$ ,  $p = .049$ . This was more evident when controlled for gender as a higher proportion of men with educated mothers were more likely to drop out of their course ( $F_{(1,327)} = 5.87$ ,  $p = .016$ ). In fact, of the 110 male students who answered that they had mothers who had at most a high school diploma, none dropped out. No main effect was found using an independent sample t-test between persisters and dropouts pertaining to their educational goals ( $p = .582$ ).

No main effect was found between the students who persisted and those who withdrew from their online course based on their financial burden,  $F_{(2,887)} = 1.42$ ,  $p = .243$ . Therefore, students who shouldered the full financial burden of attending university were just as likely to persist in their course as someone who shared or did not pay for their studies.

The main portion of the WBLQ investigated the attitudes, expectations, and reasons why students enrolled in the online course. The following section explores the differences amongst these measures when comparing students who dropped out of their online course to the ones who persisted.

*Table 14. Dropout by Demographic Variable (Cont'd)*

Variable	Persisted	Dropout
<i>Online Course Experience</i>		
None	376 94.5%	22 5.5%
At least one online course	473 96.1%	19 3.9%
<i>University Experience (years)</i>		
None	194 95.6%	9 4.4%
At least one	655 95.3%	32 4.7%
<i>Educational Computing (weekly)</i>		
Less than 6 hours	497 95.4%	24 4.6%
6 to 10 hours	219 95.6%	10 4.4%
10 hours or more	133 95.0%	7 5.0%
<i>Non-Educational Computing (weekly)</i>		
Less than 6 hours	325 95.9%	14 4.1%
6 to 10 hours	257 95.5%	12 4.5%
10 hours or more	267 94.7%	15 4.6%
<i>Financial Burden</i>		
Student	176 93.1%	13 6.9%
Student with Help	345 96.1%	14 3.9%
Not Student	328 95.9%	14 4.1%
<i>Father's Education</i>		
At most high school	268 92.9%	9 3.2%
Post-secondary	516 95.0%	27 5.0%
<i>Mother's Education</i>		
At most high school	307 97.2%	9 2.8%
Post-secondary*	504 94.2%	31 5.8%

*Note: \*Students with Mothers with a post-secondary degree are more likely to dropout ( $p < .05$ ).*

## Section II: Why Students Enrolled in the Online Course

The second part of the WBLQ solicited the reasons that the students enrolled in the online course. The responses obtained from the students who persisted in the course were compared to those who dropped out. Despite the fact that in almost each measure the students who persisted scored higher than those who dropped out of their online course, the only statistically significant difference identified was that a higher proportion of students who eventually dropped out responded that they had enrolled in the course due to commitments at home,  $F_{(1,845)} = 3.90, p = .040$  (Table 15).

Of the individuals who had cited responsibilities at home as a reason for enrolling in the online course, 7.5% dropped out. In fact, of the students who strongly agreed with the statement that commitments at home was a determining factor for taking the online course, the attrition rate was 9.4%, double the overall rate of students who responded to the WBLQ.

Furthermore, students who persisted in their online course tended to have more confidence in their choice of career ( $F_{(1,816)} = 4.88, p = .027$ ), as well in the choice of the online course ( $F_{(1,829)} = 11.90, p < .01$ ). For example, of the students who had expressed that they were not confident in their choice of the online course, 8.5% eventually dropped out of it.

When these measures were controlled for gender, it was found that a higher proportion of female students who dropped out had enrolled in the course because of their increased commitments at home,  $F_{(1,520)} = 10.34, p < .01$ , and a smaller proportion (compared to males) had done so because they wanted an easy elective,  $F_{(1,517)} = 5.36, p = .021$ . Among females who cited commitments at home as a reason for enrolling in the online course, the attrition rate was 10.8%, well above the 4.6% overall rate.

For men, on the other hand, a higher proportion of dropouts claimed that they had less financial strain than those who persisted,  $F_{(1,334)} = 4.08, p = .044$ . In addition, a higher proportion of the



persisters had enrolled in the course because they wanted an easy elective,  $F_{(1,314)} = 5.20$ ,  $p = .023$ , and because it gave them more flexibility in their schedule,  $F_{(1,342)} = 4.06$ ,  $p = .045$ .

Among the students who had completed an online course in the past, no significant differences were found between the persisters and the students who eventually dropped out. For students with no previous university experience, a higher proportion of those who persisted had enrolled in the course because they had wanted to work at their own pace,  $F_{(1,189)} = 5.85$ ,  $p = .016$ .

*Table 15. Comparisons of Reasons for Enrolling in Online Course*

	Persist	Dropout
<i>Reasons for Enrolling in Course</i>		
Flexibility in scheduling	3.47	3.41
Ability to work at own pace	3.24	3.10
Minimize travelling to school	3.14	3.15
Subject is interesting	2.99	2.79
Confident in computer skills	2.95	2.83
University is a financial strain	2.56	2.45
Course was recommended	2.45	2.24
Wanted an easy elective	2.31	2.17
Expect online to be easier	2.31	2.23
Commitments at home*	2.13	2.45
Required for programme	1.75	1.72
<i>Confidence in Decisions</i>		
In career path*	3.10	2.82
In programme of study	3.04	2.84
In the course choice**	3.03	2.60
Importance of graduation from Concordia	2.81	2.91

*Note: Based on Likert scale with 1-strongly disagree to 4-strongly agree, \* $p < .05$ , \*\* $p < .01$*

### **Section III: Expectations/Attitudes/Experiences of the Students**

The levels of expectations and the attitudes and experiences of the students enrolled in the online courses differed amongst persisters and dropouts. The following section explores those differences.

Students who persisted in their online course had higher expectations about their potential performance in the course ( $F_{(1,781)} = 10.66$ ,  $p < .01$ ) and more confidence in their ability to adapt to the self-pacing environment ( $F_{(1,833)} = 5.27$ ,  $p = .022$ ). Of the students who did not expect to do

well in the course at the time when they were answering the survey, 9.6% eventually dropped out. On the other hand, only 3.3% of the respondents who expected to do well in the course discontinued. Of the students who expressed concern about their ability to adapt to the self-pacing environment, 5.7% dropped out, whereas 4.2% of the students who did not expect any trouble adapting withdrew.

Individuals who eventually dropped out of the course tended to have disagreed more with the statement “I expected that the course was going to be easier because it was offered online” ( $F_{(1,842)} = 5.28, p = .022$ ), as well as with the expectation that there would be ample communication with fellow students ( $F_{(1,803)} = 3.97, p = .047$ ). For example, of the students who strongly disagreed with the expectations of ample communication with fellow classmates, 9.2% dropped out (double the overall attrition rate).

The biggest difference between the two groups with regards to their expectations was that more students who dropped the course responded that they were going to withdraw if they did not perform well on their first assessment,  $F_{(1,822)} = 41.34, p < .01$ . It turned out that of the students who responded that they would consider dropping the course in the event of a poor performance on an assessment, 17.4% eventually discontinued the course. This is in contrast to the 2.4% of the respondents who eventually discontinued, but had denied that their performance would have an effect on their drop out decision.

With regards to the relationship between dropping out of a course and a poor performance on the initial assessment, a one-way ANOVA concluded the existence of a main effect,  $F_{(3,820)} = 20.70, p < .01$ . A *post hoc* test (Tukey HSD) determined that students who responded that they strongly agreed with the possibility of dropping out of their online course pursuant to a poor performance on an initial assessment had a higher proportion of DISCs than students who gave any other response ( $p < .01$ ). In addition, students who agreed with the statement “I will drop the course if I perform poorly on the first assessment” had dropped out more frequently than

those who disagreed or strongly disagreed with the statement ( $p < .01$ ). There was no difference detected between students who disagreed and strongly disagreed with the statement ( $p = .724$ ).

As it pertains to the differences in attitudes and current experiences (Table 16), persisters tended to have less trouble finding time to devote to the course,  $F_{(1,858)} = 11.39$ ,  $p < .01$ , and did not have to adjust their study habits as much as learners who eventually withdrew,  $F_{(1,855)} = 4.59$ ,  $p = .032$ . Of the students who admitted that finding time to devote to the course was problematic, 6.8% eventually dropped out. In fact, the dropout rate among students who responded “strongly disagree” to the statement “I am having no trouble finding time to devote to this course” was 17.5%.

Students who dropped out of their online course responded more negatively about feeling as though they were part of the class,  $F_{(1,806)} = 5.45$ ,  $p = .020$ , and about the course taking less time than others,  $F_{(1,815)} = 8.29$ ,  $p < .01$ . The largest difference between the two groups of students in this section of the WBLQ was that those who eventually dropped out were more likely already considering it than those who did not,  $F_{(1,852)} = 41.34$ ,  $p < .01$ .

According to the results of the WBLQ (Figure 8), 8.1% of the respondents agreed or strongly agreed with the notion that they were considering dropping the course by the DISC deadline. The majority of the students who strongly agreed with the statement that they were likely dropping out actually went through with it (56.5% dropped out). However, this number was drastically reduced if they simply “agreed” with the idea of potentially dropping out of their online course (10.9%). This same value was further lowered if they “disagreed” (3.3%), or “strongly disagreed” (1.8%) with the statement.

When these measures were controlled by gender, it was found that more females who dropped out responded that they were not receiving timely feedback ( $F_{(1,472)} = 4.58$ ,  $p = .033$ ) and were finding it more difficult to make time for the course ( $F_{(1,523)} = 8.25$ ,  $p < .01$ ). These measures did not prove to be statistically significant amongst males.

For students who had no university experience, a higher proportion of the dropouts expressed that they had to make adjustments to their study habits ( $F_{(1,192)} = 7.93, p < .01$ ), felt as though they were not part of the class ( $F_{(1,183)} = 6.83, p = .01$ ), and that they were having more trouble devoting time to the course ( $F_{(1,189)} = 4.57, p = .034$ ). On the other hand, among students who had previous university experience, a higher proportion of the dropouts cited that their online course demanded more of their time than other courses they were taking ( $F_{(1,632)} = 7.81, p < .01$ ) and that they were also having trouble finding the time to devote to it ( $F_{(1,667)} = 7.41, p < .01$ ).

For students who had no previous experience with online courses, a higher proportion of those who dropped out replied that they had trouble devoting time to the course ( $F_{(1,369)} = 4.96, p = .026$ ) and did not have as much confidence in their ability to adapt to the self-pacing environment as those who persisted ( $F_{(1,374)} = 9.68, p < .01$ ). On the other hand, among students who had previous experience with online courses, those who persisted tended to expect that the course would be easier because it was online ( $F_{(1,471)} = 4.32, p = .038$ ), made more use of the class discussion board ( $F_{(1,455)} = 3.84, p = .049$ ), and had less trouble devoting time to the course ( $F_{(1,473)} = 6.43, p = .012$ ).

For part-time students, those who dropped out scored significantly lower than those who persisted in the measures “I feel as though I am part of the class” ( $F_{(1,303)} = 5.49, p = .020$ ) and “This course takes less time than others I am taking” ( $F_{(1,307)} = 7.31, p < .01$ ). Of the students who strongly disagreed with the notion that they felt as though they were part of the class, 7.5% discontinued the course. On the other hand, 3.2% of the students who responded that they felt as though they were part of the class dropped out.

When the employment status of the students was controlled for, students who worked part-time and persisted in the course tended to make more use of the class discussion board ( $F_{(1,499)} = 4.13, p = .043$ ), did not have to adjust their study habits ( $F_{(1,513)} = 9.40, p < .01$ ), and had less trouble devoting time to the course compared to those who dropped out ( $F_{(1,517)} = 13.17, p < .01$ ). For students who worked full-time, a higher proportion of those who dropped out

predicted that they would have a tougher time adapting to the self-pacing environment ( $F_{(1,125)}=9.74, p < .01$ ) and devoted more time to the course than others given in a classroom setting ( $F_{(1,123)}=5.36, p = .022$ ).

Despite the fact that the majority of students who were strongly considering dropping out of their online course eventually did so, a significant proportion changed their minds (43%). This occurrence was even more prevalent among individuals who agreed with the statement “I am considering dropping out”, as demonstrated by the fact that 89% of the students who responded in this manner did not follow through with this intent.

*Table 16. Comparison of Expectations, Attitudes, and Experience*

	Persist	Dropout
<i>Expectations</i>		
It will provide more flexibility	3.17	3.19
To do well**	3.01	2.65
No problems adapting to self-pacing*	2.95	2.68
Ample time to devote to course	2.87	2.76
Just as structured as classroom	2.86	2.87
To communicate with instructor	2.55	2.50
Easier course*	2.31	2.02
Fewer readings	2.27	2.21
To communicate with students*	2.26	2.00
More homework	2.21	2.21
Drop the course if first test is poor**	1.67	2.48
<i>Attitude/Experience</i>		
My actions have a direct impact on my success	2.91	2.90
Having no trouble finding time for the course**	2.64	2.21
Using the discussion board to communicate	2.57	2.36
Feedback is timely	2.54	2.26
Needed to adjust study habits*	2.50	2.80
Course taking less time than others**	2.32	1.92
Feel part of the class*	2.32	2.00
Had to learn new computer skills	1.86	1.90
Considering dropping the course**	1.46	2.61

*Note: Based on Likert scale with 1-strongly disagree to 4-strongly agree, \* $p < .05$ , \*\* $p < .01$ .*

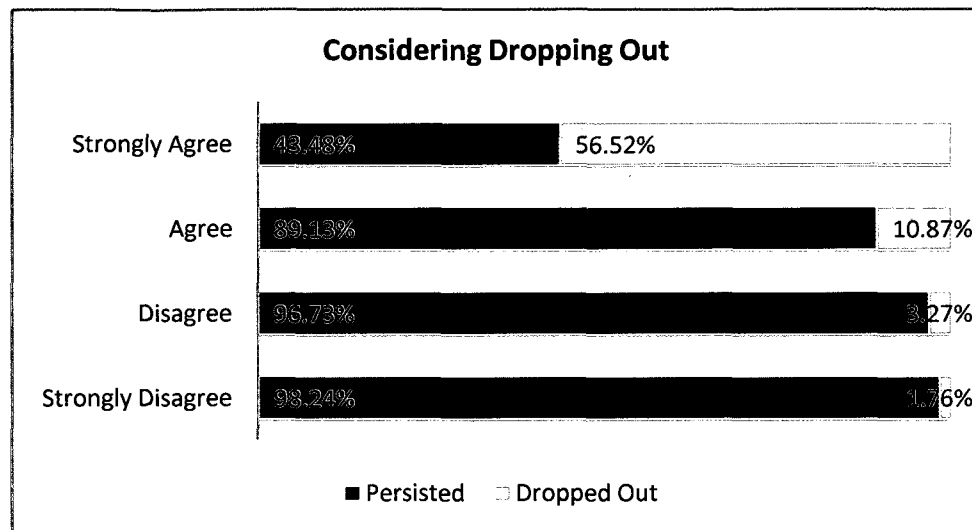


Figure 8. Responses to "I am Considering Dropping Out"

A one-way ANOVA proved to be significant for dropping out of the course based on the students' intent to do so,  $F_{(3,850)} = 69.95$ ,  $p < .01$ . More specifically, a *post hoc* Tukey HSD test concluded that students who responded that they strongly agreed with the statement "I am considering dropping out" were more likely to do so than those who gave any other answer ( $p < .01$ ). Similarly, students who agreed with this same statement were more likely to drop out than those who disagreed ( $p = .041$ ) or strongly disagreed ( $p < .01$ ). There was no significant difference between those who responded that they disagreed or strongly disagreed with the statement ( $p = .679$ ).

It turned out that, of the respondents who were leaning towards dropping out, there was a higher proportion of full-time students who changed their minds as compared to part-time students. As seen in Figure 9, of the students studying full-time who responded that they strongly agreed with the statement that they intended on dropping out, only 30% did so, compared to 77% of the part-time students. On the other hand, of the respondents who claimed that they were not considering dropping out (strongly disagreed or disagreed), more part-time students changed their minds. A MANOVA identified an interaction effect between the status of the student and their intent-behaviour-action,  $F_{(3,846)} = 12.27$ ,  $p < .01$ . Therefore, full-time

students who considered dropping out tended to change their minds about it, whereas a higher proportion of part-time students who had initially intended on persisting in the course did not.

One of the sources of this phenomenon may be explained by the fact that more women who answered that they were considering withdrawing actually did so, as opposed to the men. In all, 71.4% of the women who were strongly considering dropping out went through with it, whereas only one-third of the males did so. As demonstrated by Figure 9, almost all of the men who intended on continuing with the course persisted in it.

However, of those who answered “agree” to the statement that they were considering dropping out, only 4.4% actually carried through with the withdrawal procedure. Women continuously had higher dropout rates than men based on their answer, especially if they were leaning in any way towards abandoning the course. A MANOVA confirmed an interaction effect between the variables,  $F_{(3,846)} = 8.69, p < .01$ . One must also keep in mind that this may be an artefact of the few dropouts among men who responded to the WBLQ.

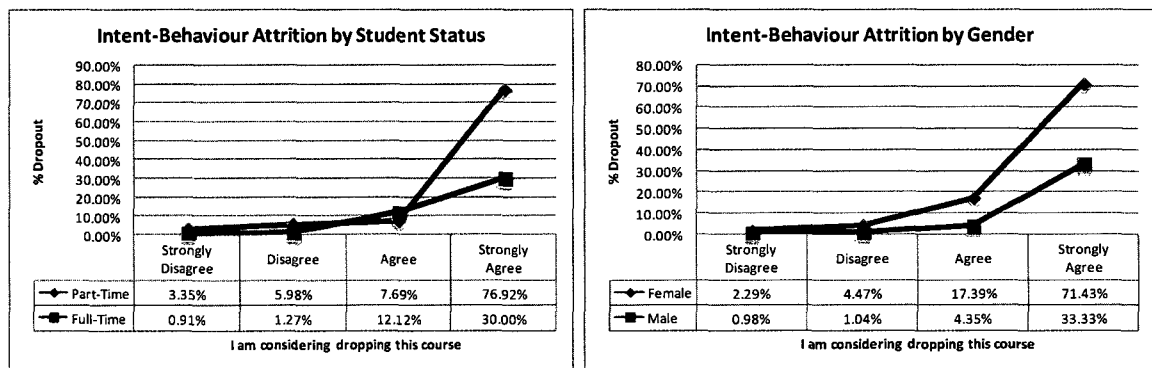


Figure 9. Intent-Behaviour Attrition by Student Status and Gender

## Results from the Registration Data

This section focuses on the registration data collected directly from Concordia University's database. Unlike the figures gathered in the WBLQ, which were volunteered by students at the beginning of the semester, this information was collected directly from the University's registration database at the conclusion of the fall 2007 semester for all students enrolled in three particular courses:

- CHEM 208 – Chemistry in Our Lives (Science)
- FINA 200 – Personal Finance (Business)
- RELI 216 – Encountering World Religions (Humanities)

Table 17. Demographic Information from Registration Data

Variable	Frequency	Percent	C.Percent	Variable	Frequency	Percent	C.Percent
<i>Course</i>				<i>Source</i>			
CHEM 208	718	45.7	45.7	CEGEP	897	57.1	57.1
FINA 200	487	31.0	76.8	Other (Canadian)	507	32.3	89.4
RELI 216	365	23.2	100.0	International	166	10.6	100.0
<i>Gender</i>				<i>Programme Preference</i>			
Female	830	52.9	52.9	First choice	1135	72.3	72.3
Male	740	47.1	100.0	Second choice	246	15.8	88.5
<i>First Language</i>				Third choice or +	180	11.5	100.0
English	1068	68.0	68.0	<i>Years in Programme</i>			
French	147	9.4	77.4	One	308	19.6	19.6
Other	355	22.6	100.0	Two	447	28.5	48.1
<i>Age Group</i>				Three	339	21.6	69.7
20 and under	329	21.0	21.0	Four	275	17.5	87.2
21	283	18.0	39.0	Five	114	7.3	94.5
22	289	18.4	57.4	Six or more	87	5.5	100.0
23	209	13.3	70.7	<i>Percent of Programme Completed</i>			
24-25	235	15.0	85.7	Under 20	236	16.0	15.0
26 and over	225	14.3	100.0	20 to under 40	300	20.4	36.4
<i>Student Status</i>				40 to under 60	265	18.0	54.5
Full-Time	877	55.9	55.9	60 to under 80	250	17.0	71.4
Part-Time	693	44.1	100.0	80 or more	420	28.6	100.0
<i>Faculty</i>				<i>University Credits Completed</i>			
Arts & Science	933	59.4	59.4	Under 30	459	29.2	29.2
JMSB	458	29.2	88.6	30 to under 60	477	30.4	59.6
Independent	99	6.3	94.9	60 to under 90	409	26.1	85.7
Fine Arts	44	2.8	97.7	90 to under 120	195	12.4	98.1
E&CS	36	2.3	100.0	120 and over	30	1.9	100.0
<i>Immigration Status</i>				<i>Cumulative Grade-Point Average</i>			
Canadian	1404	89.4	89.4	A	150	9.5	9.5
International	166	10.6	100.0	B	717	45.7	55.2
<i>Program Type</i>				C	573	36.5	91.7
Regular	1146	73.0	73.0	D	94	6.0	97.7
Extended Cr.	290	18.5	91.5	F	36	2.3	100.0
Mature Entry	134	8.5	100.0	<i>Previous DISC</i>			
				0	1394	88.8	88.8
				1	62	3.9	92.7
				2	26	1.7	94.4
				3 or more	88	5.6	100.0



Table 17 displays a summary of the data gathered for the students enrolled in these courses (N = 1570). With an enrolment of 718 students, CHEM 208 is the most popular of the three, followed by FINA 200 (N = 487), and RELI 216 (N = 365). Overall, a higher proportion of women were enrolled in the online courses than men (52.9% women, 47.1% men), and more students were at Concordia on a full-time basis (55.9%). The most popular faculty in which the students were enrolled was Arts and Science (59.4%), followed by the John Molson School of Business (29.2%), and then Independent students who were not enrolled in a particular programme (6.3%). The majority of the students in the three courses were Canadian citizens (89.4%), enrolled in a regular undergraduate programme (73.0%), and from Québec's CEGEP system (57.1%).

## ***Analysis of the Demographic Variables***

### **Gender**

Among all the students enrolled in the three online courses, females were older than the males ( $M_F = 23.41$ ,  $SD_F = 5.50$ ,  $M_M = 22.81$ ,  $SD_M = 3.32$ ,  $t_{(1568)} = 2.60$ ,  $p < .01$ ) and this difference was further examined by investigating the individual age groups. Within the age groups, however, it was found that the genders differed ( $F_{(5,1564)} = 2.72$ ,  $p = .019$ ) and a Tukey HSD *post hoc* test confirmed that the 24-25 age group was composed of significantly more males than the 21-year-old ( $p = .047$ ) and the 26 and over ( $p = .019$ ) age groups.

The proportion of females enrolled full-time in their studies was found to be significantly greater than males,  $F_{(1,1568)} = 10.92$ ,  $p < .01$ . Although no significant difference was found between full-time male and female students regarding their age ( $M_F = 22.10$ ,  $SD_F = 4.38$ ,  $M_M = 21.70$ ,  $SD_M = 2.27$ ,  $t_{(691)} = 1.62$ ,  $p = .105$ ), women were significantly older than men among the part-time enrolments ( $M_F = 25.35$ ,  $SD_F = 6.35$ ,  $M_M = 23.98$ ,  $SD_M = 3.62$ ,  $t_{(691)} = 3.51$ ,  $p < .01$ ).

A main effect was also found between the genders when considering the type of program in which they were enrolled,  $F_{(2,1567)} = 10.74$ ,  $p < .01$ . A *post hoc* analysis using the Tukey HSD criterion confirmed that a significantly higher proportion of men were enrolled in the extended

credit programme than in regular ( $p < .01$ ) or mature entry ( $p < .01$ ) programmes. Although there were more women than men enrolled in the regular and mature entry programmes, the difference was not found to be statistically significant.

Enrolment by faculty also produced main effects between men and women ( $F_{(4,1568)} = 7.78, p < .01$ ). The Tukey HSD *post hoc* test identified that there were proportionally more males enrolled in Engineering and Computer Science than in any other faculty ( $p < .05$ ), and the John Molson School of Business had significantly more males enrolled in it than in Arts and Science ( $p < .01$ ). In addition, a larger proportion of males were enrolled as independent students, which did not belong to a particular faculty or programme ( $p < .01$ ).

Significant differences were also found between males and females as it pertained to their provenance to Concordia University,  $F_{(2,1567)} = 11.36, p < .01$ . As determined by the Tukey *post hoc* test, the majority of students coming from the CEGEP system were women ( $p < .01$ ), and international students were mostly male ( $p < .01$ ). Of the students who came from the CEGEP system, women had a better cumulative GPA ( $M_F = 2.65, SD_F = 0.82, M_M = 2.43, SD_M = 0.75, t_{(1568)} = 5.62, p < .01$ ), as well as a higher CRC score than did the men ( $M_F = 25.14, SD_F = 3.97, M_M = 23.65, SD_M = 4.01, t_{(895)} = 5.55, p < .01$ ). A Tukey HSD *post hoc* test showed that the majority of strong CEGEP students (top 80 percentile) were women ( $p < .01$ ), while a higher proportion of the weaker students (bottom 20 percentile) were men ( $p < .01$ ).

However, despite this fact, no significant difference was found among the males and females for overall performance in their respective courses,  $M_F = 2.85, SD_F = 1.12, M_M = 2.73, SD_M = 1.18, t_{(1376)} = 1.84, p = .066$ . Amid the full-time students, however, it was found that women outperformed men in their online courses ( $M_F = 3.03, SD_F = 1.00, M_M = 2.79, SD_M = 1.15, t_{(804)} = 3.08, p < .01$ ). This trend was reversed with the part-time students, where men outperformed the women, but the difference was not found to be statistically significant using an independent samples test ( $M_F = 2.53, SD_F = 1.25, M_M = 2.66, SD_M = 1.22, t_{(570)} = 1.27, p = .205$ ). No main effect

was found between males and females when taking into account their previous history in withdrawing from courses at Concordia,  $p = .923$ .

Another significant difference was found between males and females with regards to their enrolment in the individual courses. More precisely, a higher proportion of females enrolled in the religion and chemistry courses, whereas more males preferred the finance course (Table 18). A chi-squared test for independence proved to be positive for this gender gap between the courses,  $\chi^2_{(2, N = 1570)} = 48.30, p < .01$ .

*Table 18. Gender Breakdown by Course*

Course	Female %	Male %
Chemistry	51.4	48.6
Finance	43.9	56.1
Religion	67.7	32.3

## Age

The average age of the students enrolled in the three courses was 23.13 years-old ( $SD = 4.57$ ) with over half of the students (57.4%) being under 23 years of age. However, the highest frequency of students among the different age groups presented in Table 17 was found in the "20 and under" age category (21.0%).

Of the students coming to Concordia from the CEGEP system, a one-way ANOVA found that the CRC scores differed amongst the age groups,  $F_{(5, 891)} = 14.19, p < .01$  (Table 19). Further analysis, using the Tukey HSD method, showed that students who were 24 years of age and older had significantly lower CRC scores than all the younger age groups ( $p < .05$ ). Furthermore, students in the 20 and under age group had higher CRC scores than those from the 23-year-old age group ( $p = .021$ ). A correlational analysis of the students' ages and their CRC scores yielded a statistically significant negative correlation,  $r_{(897)} = -.108, p < .01$ . That is, as the age of the student increased, their CRC scores tended to decrease.

Table 19. Mean CRC Scores by Age Group

Age Group	N	M	SD
20 and under	183	25.68	2.95
21	209	25.07	4.16
22	182	24.94	3.62
23	125	24.25	3.92
24-25	108	22.65	4.14
26 and over	90	22.53	5.15

Further analysis of student performance by age group using a one-way ANOVA proved to be statistically significant,  $F_{(5,1372)} = 4.60$ ,  $p < .01$ . As seen in Table 20, student performance, as measured by the GPA achieved in the course, seemed to decrease with age. A *post hoc* analysis (Tukey HSD) confirmed that students in the three youngest age groups outperformed those in the oldest ( $p < .05$ ). However, there was no difference between the age groups for the student's cumulative grade-point average ( $F_{(5,1564)} = 0.91$ ,  $p = .474$ ) despite the fact that students in the 22-year-old age group had the highest cGPA.

Table 20. Mean GPA and Cumulative GPA Scores by Age Group

Age Group	GPA in Course		cGPA	
	M	SD	M	SD
20 and under	2.90	1.08	2.53	0.84
21	2.95	1.07	2.52	0.82
22	2.87	1.03	2.63	0.69
23	2.71	1.09	2.55	0.72
24-25	2.63	1.33	2.50	0.78
26 and over	2.52	1.32	2.53	0.89

On the other hand, a main effect was found between the age group of the student and the previous DISCs that they had accumulated ( $F_{(5,1564)} = 10.02$ ,  $p < .01$ ). A *post hoc* test (Tukey HSD) confirmed that students in the oldest age category dropped out of more courses than all others ( $p < .01$ ), with the exception of the 24-25 year-olds ( $p = .098$ ). Students in the 24-25 year-old age group also dropped out of more courses than the youngest students ( $p < .01$ ). The overall trend was, the older the student, the more courses they had dropped.

When comparing the age of the students enrolled in the three courses, one notices that there are several differences amongst them. For example, one-quarter of the students enrolled in the

chemistry course were 20 years-old or younger and 77% were less than 24 years-old. Conversely, 38% of the students enrolled in the finance course were at least 24 years-old (Figure 10). A one-way ANOVA for the average age of the students and the course they were enrolled in was found to be positive for a main effect ( $F_{(2,1567)} = 29.56, p < .01$ ). According to a Tukey HSD *post hoc* test, the average age of students enrolled in the religion course ( $M = 23.06, SD = 3.88$ ) was significantly greater than those in chemistry ( $M = 22.33, SD = 3.29$ ) ( $p = .203$ ), but less than those enrolled in FINA 200 ( $M = 24.35, SD = 6.15$ ) ( $p < .01$ ). In addition, students in the chemistry course were found to be younger than those in finance ( $p < .01$ ).

According to the pattern displayed in Figure 10, there seems to be a trend of a decreasing proportion of older students in the chemistry course, whereas the opposite was true in the finance course. The religion course was more or less equally distributed across the different age groups.

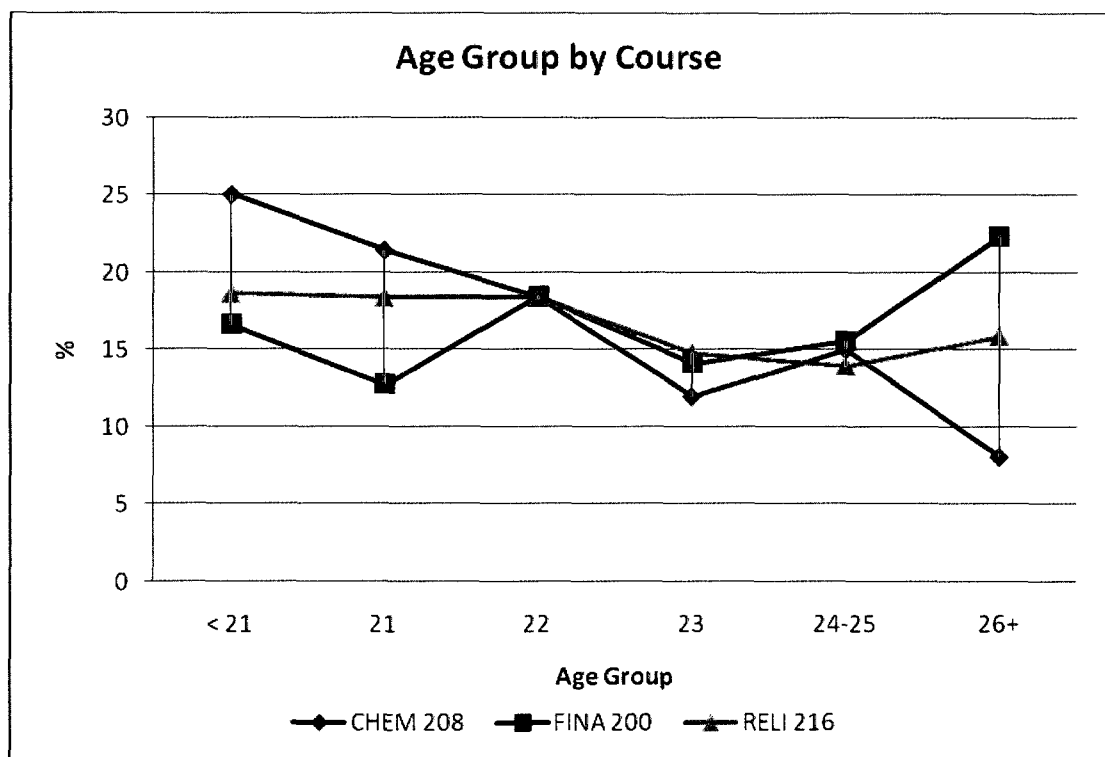


Figure 10. Age Group by Course

## Student Status

When full-time and part-time students are analyzed separately, it was found that 56.6% of the full-time students were female and that 90.3% of them were 24 years-old or younger. Most of the full-time students were in the first three years of their programme of study (83.8%), and were enrolled in a regular programme (73.2%). Of the remaining students, 5.5% were mature entries and 21.3% were in an extended credit programme. Arts and Science was the most popular faculty among the full-time students (59.5%), followed by the John Molson School of Business (35%) and Engineering and Computer Science (2.4%). Of these students, 60.0% were accepted to Concordia out of the province's CEGEP system.

With regards to part-time students, 51.8% were male, with 64.5% of the students being 24 years-old or younger. Of these students, 51.5% are in the first three years of their programme, and 72.7% were enrolled in a regular programme, 14.9% were in the extended credit, and 12.4% were mature entry students. The most popular faculty was Arts and Science (59.3%), followed by the John Molson School of Business (21.8%), and Independent studies (13.0%). A total of 53.5% of the students enrolled in the three targeted courses were from the province's CEGEP system.

When compared for statistical differences, several main effects were unearthed between full-time and part-time students. On the whole, part-time students had more university credits completed ( $M_{PT} = 58.83$ ,  $SD_{PT} = 34.47$ ,  $M_{FT} = 48.14$ ,  $SD_{FT} = 29.58$ ,  $t_{(1568)} = 3.52$ ,  $p < .01$ ), and they also tended to be older than full-time students ( $M_{PT} = 24.64$ ,  $SD_{PT} = 5.17$ ,  $M_{FT} = 21.93$ ,  $SD_{FT} = 3.62$ ,  $t_{(1568)} = 12.22$ ,  $p < .01$ ). This phenomenon also manifested itself among the age groups as the proportion of part-time students increased with each increase in age category,  $\chi^2_{(5, N = 1570)} = 303.9$ ,  $p < .01$ , and the proportion of part-time students increased with an increase in the amount of years of university experience,  $\chi^2_{(4, N = 1570)} = 230.0$ ,  $p < .01$  (Figure 11).

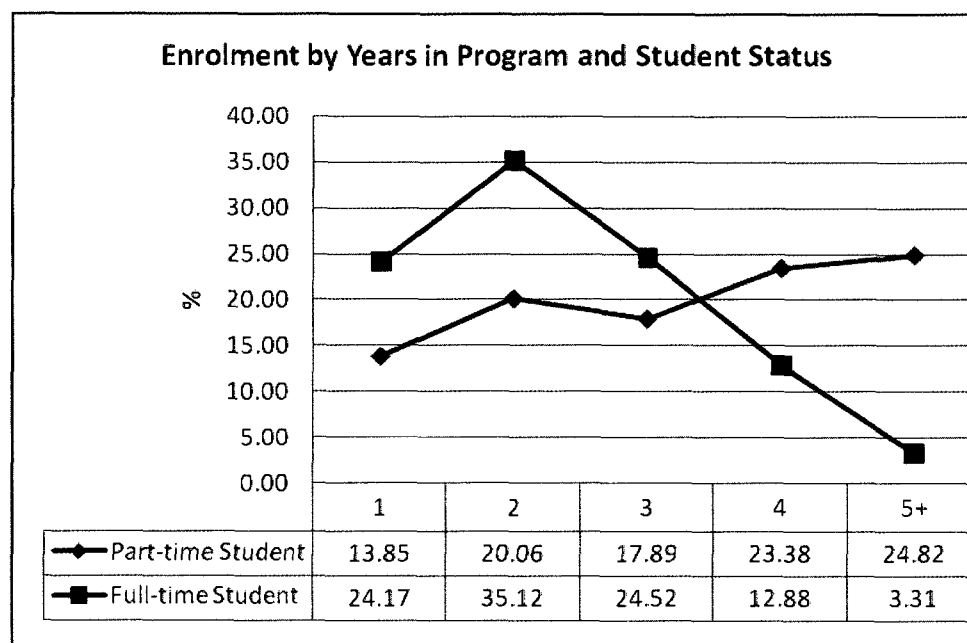


Figure 11. Enrolment by Years in Program and Student Status

When further investigating the difference in age between part-time and full-time students using the Tukey HSD *post hoc* test, it was found that students who were younger than 21 years-old had a higher proportion of full-time enrolments than all other age groups ( $p < .01$ ). In addition, students aged between 21 and 24 years had a significantly higher proportion of full-time students than the older age categories ( $p < .01$ ). There was no significant difference among the older age groups, which were both predominantly comprised of part-time students.

When considering the students who were accepted to Concordia from CEGEP, the CRC scores of those studying full-time were greater than those taking less than four courses a semester ( $M_{PT} = 23.23$ ,  $SD_{PT} = 4.54$ ,  $M_{FT} = 25.41$ ,  $SD_{FT} = 3.40$ ,  $t_{(895)} = 8.23$ ,  $p < .01$ ). There was also a difference in the performance of the students in their respective courses (measured by GPA). First of all, full-time students outperformed those enrolled part-time,  $M_{PT} = 2.60$ ,  $SD_{PT} = 1.23$ ,  $M_{FT} = 2.93$ ,  $SD_{FT} = 1.07$ ,  $t_{(1376)} = 5.24$ ,  $p < .01$ . In addition, full-time students were found to have a higher cGPA ( $M_{PT} = 2.39$ ,  $SD_{PT} = 0.83$ ,  $M_{FT} = 2.66$ ,  $SD_{FT} = 0.74$ ,  $t_{(1568)} = 6.71$ ,  $p < .01$ ), and had previously dropped out of less courses than students studying on a part-time basis ( $M_{PT} = 0.60$ ,  $SD_{PT} = 1.96$ ,  $M_{FT} = 0.22$ ,  $SD_{FT} = 1.07$ ,  $t_{(1568)} = 4.87$ ,  $p < .01$ ).

Table 21. Proportion of Part-Time and Full-Time Students by Age Group

Age Group	Part-Time %	Full-Time %
20 and under	6.3	32.5
21	11.5	23.1
22	18.9	18.0
23	15.9	11.3
24-25	22.5	9.0
26 and over	24.8	6.0

The type of programme in which students were enrolled also differed amongst full-time and part-time students,  $F_{(2,1567)} = 15.56$ ,  $p < .01$ . A Tukey HSD *post hoc* test concluded that there were more full-time students enrolled in an extended credit programme than regular ( $p = .024$ ) and mature entry students ( $p < .01$ ). Furthermore, a significantly larger proportion of regular programme students were registered full-time as compared to mature entry ( $p < .01$ ). And finally, as demonstrated in Figure 12, part-time students represented a significantly larger share of mature entry students at Concordia than those in the regular or extended credit programmes ( $p < .01$ ).

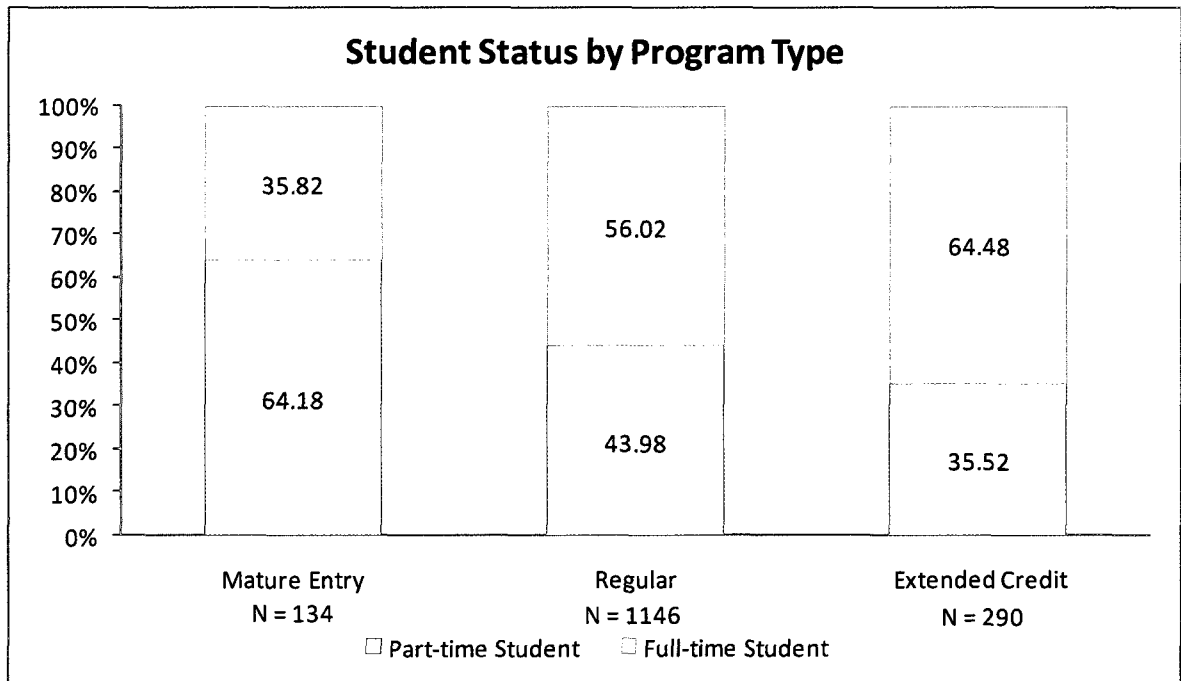


Figure 12. Student Status by Program Type



On average, a part-time student who had enrolled in an online course had completed a larger portion of their programme than a typical full-time student ( $M_{PT} = 0.61$ ,  $SD_{PT} = 0.32$ ,  $M_{FT} = 0.50$ ,  $SD_{FT} = 0.30$ ,  $t_{(1469)} = 6.95$ ,  $p < .01$ ). When the percentage of the completed programme was broken up into quintiles (Figure 13), one notices an increase in the proportion of enrolments of part-time students the closer they are to programme completion. On the other hand, the proportion of students enrolled on a full-time basis did not seem to be influenced by the amount of credits needed to complete their degree.

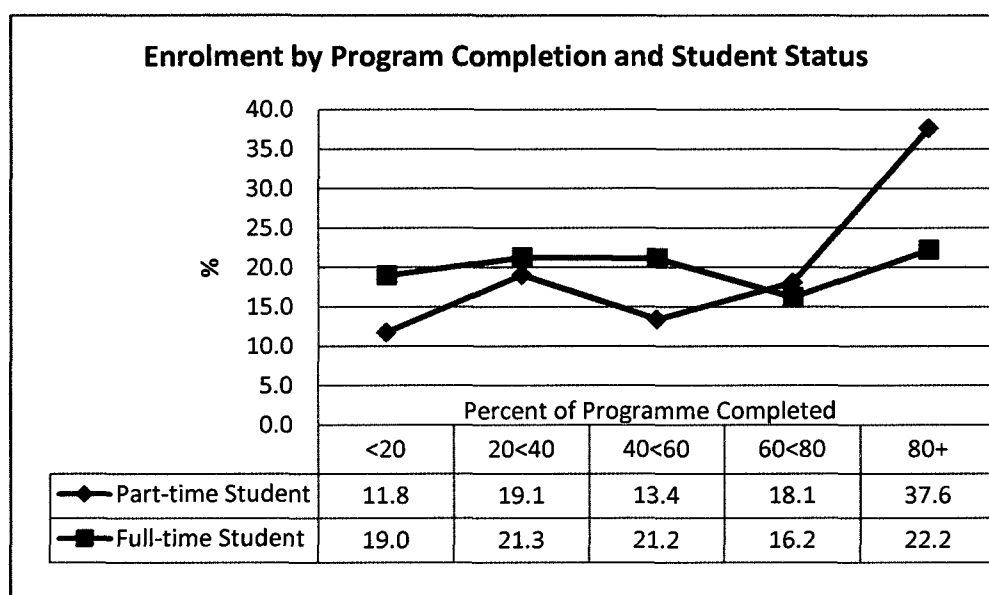


Figure 13. Enrolment by Program Completion and Student Status

With regards to the individual courses, a chi-squared test for independence identified a main effect among the status of the students,  $\chi^2_{(2, N = 1570)} = 16.02$ ,  $p < .01$ . On one hand, the chemistry and religion classes were mainly comprised of full-time students, whereas the finance course had a slim part-time student majority (Table 22).

Table 22. Student Status by Course

Course	Part-Time %	Full-Time %
Chemistry	39.3	60.7
Finance	50.9	49.1
Religion	44.7	55.3

In addition, when controlling for the course, CHEM 208 proved to be the only course where there was a significant difference in the proportion of full/part-time students by gender,  $\chi^2_{(1, N = 1718)} = 13.38, p < .01$ . Where the finance course consisted of an even split between males and females studying part-time and full-time, and religion was composed of a similar proportion of full-time and part-time students by gender, the chemistry course comprised of a higher proportion of full-time female students than full-time males (Table 23).

Table 23. Gender and Student Status by Course

Course	Part-Time %	Full-Time %
<i>Chemistry</i>		
Female	32.8	67.2
Male	46.1	53.9
<i>Finance</i>		
Female	50.0	50.0
Male	51.6	48.4
<i>Religion</i>		
Female	42.9	57.1
Male	48.3	51.7

## Program Preference

When applying to Concordia University, students were asked to pick secondary and tertiary choices for their programme of study in case they are refused entry into their first choice. A significant difference was found between the age of the students and their programme of preference, as determined by a one-way ANOVA,  $F_{(2, 1558)} = 7.25, p < .01$ . It was determined that the older the student, the greater the likelihood that the programme they were enrolled in was one of their top two choices.

In addition, further analyses determined that main effects were present between admission choice and the number of years that the student had been enrolled in the programme ( $F_{(2, 1558)} = 10.20, p < .01$ )<sup>7</sup>, as well as with the amount of the programme that they had completed ( $F_{(2, 1468)} = 15.78, p < .01$ ). A *post hoc* test (Tukey HSD) confirmed that students who were enrolled in a programme that was one of their top two choices were more likely to have been in the

<sup>7</sup> Includes students who were enrolled as "independent" (no programme).

programme for a longer period of time ( $p < .01$ ). Moreover, students who were enrolled in their preferred programme had completed more of it than those who were enrolled in their second choice ( $p = .030$ ), or their third choice or more ( $p < .01$ ). Similarly, students in their second-choice programme had completed more of it than those who were in choice three or more ( $p = .027$ ).

A one-way ANOVA identified the existence of a main effect for the performance ( $F_{(2,1369)} = 6.13, p < .01$ ) and the cumulative GPA of students enrolled in the courses ( $F_{(2,1558)} = 11.82, p < .01$ ). A Tukey HSD *post hoc* test confirmed that students enrolled in their first choice of programme outperformed all others ( $p < .05$ ), and that similarly, their cGPA was superior to those who were not in their preferred programme ( $p < .05$ ). A comparable finding was found amongst the CRC scores of the students based on their programme preference,  $F_{(2,892)} = 26.88, p < .01$ . Students who were enrolled in their first choice of programme had higher CRC scores than those who were in their second choice or more ( $p < .01$ ). No significant differences were found between programme preference and the number of courses that students had previously dropped.

## **Program Type**

Although the vast majority of students were enrolled in a regular programme (73.0%), one must also consider the demographic differences amongst the various programmes. For instance, mature students, who by definition must be at least 21 years-old (Concordia University, 2008) to be admitted to the programme, are older than students enrolled in the other types of programmes. Furthermore, students who were in the extended credit programme were typically making the transition to university directly out of high school or junior college, and therefore tended to be younger. The differences amongst the ages of the various programme students, as shown in Table 24, was confirmed using a one-way ANOVA,  $F_{(2,1567)} = 111.60, p < .01$ . A *post hoc* test using the Tukey HSD method showed that students in the mature entry program were significantly older ( $p < .01$ ), and that those enrolled in the extended credit programme were younger ( $p < .01$ ) than all other groups.

Table 24. Age of Students by Type of Programme		
Programme	M	SD
Regular	22.9	4.1
Mature Entry	28.2	7.7
Extended Credit	21.7	2.4

A one-way ANOVA also detected a main effect amongst the types of programmes with regards to the gender of the students enrolled in them,  $F_{(2,1567)} = 10.74$ ,  $p < .01$ . A *post hoc* analysis (Tukey HSD) identified the fact that there was a significantly greater proportion of males who enrolled in the extended credit programme than females ( $p < .01$ ).

In addition, a one-way ANOVA was positive for differences between the types of programmes and the educational status of its students,  $F_{(2,1567)} = 15.56$ ,  $p = .01$ . A Tukey HSD *post hoc* test confirmed that there were significantly more part-time students enrolled in the mature entry programme than full-time students ( $p < .01$ ). It was also determined that there was a higher proportion of full-time students in the extended credit programme as compared to the regular programme ( $p = .024$ ).

Although a one-way ANOVA did not find any significant differences for the cumulative GPA of students enrolled in the different programmes ( $F_{(2,1567)} = 1.33$ ,  $p = .266$ ), a main effect was found among their CRC scores ( $F_{(2,894)} = 48.85$ ,  $p < .01$ ). A Tukey HSD *post hoc* test identified the fact that mature entry students had significantly lower CRC scores than other students ( $p < .01$ ).

Further analysis also concluded that performance differed between the students in the various programmes ( $F_{(2,1375)} = 6.05$ ,  $p < .01$ ). A *post hoc* test (Tukey HSD) found that students enrolled in the mature entry programme ( $M = 1.99$ ,  $SD = 1.56$ ) did not perform as well as those in the regular ( $M = 2.50$ ,  $SD = 1.38$ ) and extended credit ( $M = 2.52$ ,  $SD = 1.39$ ) programmes ( $p < .01$ ).

A main effect was found between the programmes and a student's previous dropout behaviour using a one-way ANOVA,  $F_{(2,1567)} = 9.16$ ,  $p < .01$ . A Tukey HSD *post hoc* test determined that

students enrolled in the mature entry programme had previously discontinued more courses than regular and extended credit programme students ( $p < .01$ ).

With regards to the individual courses, a chi-squared test for independence identified a main effect among the students with regards to the type of program in which they were enrolled,  $\chi^2_{(4, N = 1570)} = 26.91, p < .01$ . There was double the proportion of mature entry students in the religion and finance courses than in chemistry. The proportion of extended credit students was fewest in the religion course, which also boasted the highest percentage of regular program students.

## Faculty

Although the majority of students enrolled in the online courses were from the faculty of Arts and Science, the proportion was by far the highest in the religion course (81.1%). In fact, the difference in the proportion of students enrolled in the three courses based on their faculty proved to be significant using a chi-squared test of independence,  $\chi^2_{(8, N = 1570)} = 144.10, p < .01$ .

The proportion of independent students enrolled in FINA 200 was twice the amount than that in chemistry and religion, and the religion class was predominantly comprised of students in the faculty of Arts and Science. The JMSB students made up a larger proportion of the chemistry course than in any other class, but that same course proved to be the least popular amongst Fine Arts students (Figure 14).

A one-way ANOVA pinpointed the existence of main effects between the students' faculty of study and their performance in the online course,  $F_{(4, 1373)} = 30.41, p < .01$ . A Tukey HSD *post hoc* test indicated that students who were not enrolled in a programme of study (Independent) had significantly lower grades than students in all other faculties ( $p < .01$ ), with the exception of those from Fine Arts ( $p = .998$ ), as seen in Figure 15. Students from the JMSB outperformed all other students ( $p < .01$ ), with the exception of those from E&CS ( $p = .686$ ).

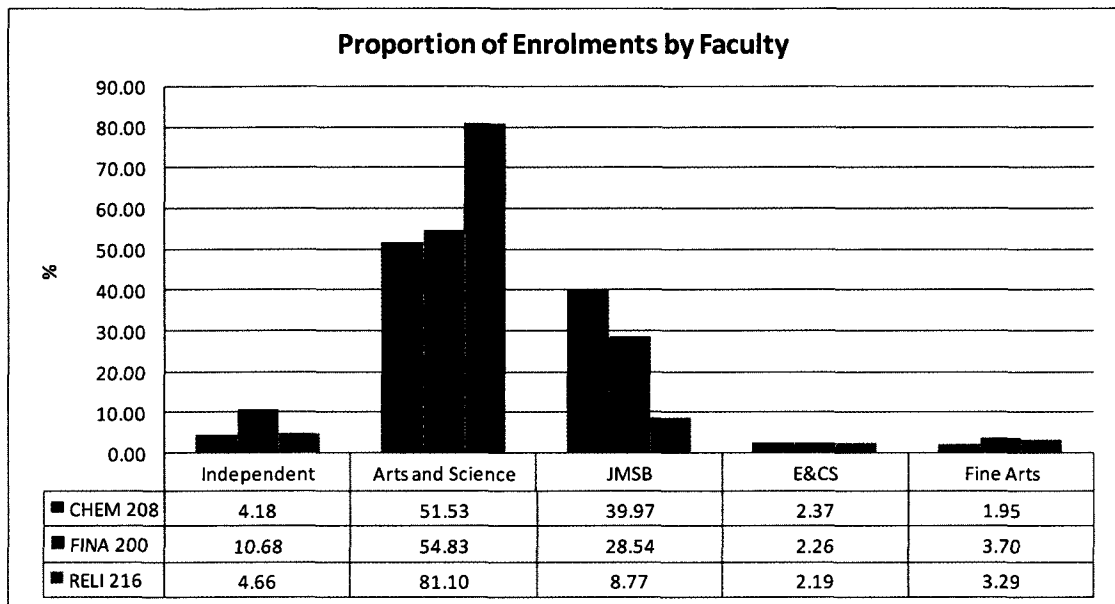


Figure 14. Proportion of Enrolments by Faculty

In the same way, the cumulative grade-point average proved to be different amongst the students based on their faculty of study,  $F_{(4,1565)} = 22.55$ ,  $p < .01$ . A *post hoc* test (Tukey HSD) confirmed that the cGPA of independent students was inferior to all programme students ( $p < .05$ ). Students in the JMSB also had higher cGPA scores than those in Arts and Science ( $p < .01$ ) and E&CS ( $p = 0.47$ ). Similar results were found in both cases (performance and cGPA) when individual courses were investigated.

The results displayed in Figure 15 also demonstrate that in all cases, the performance in the online course was different than the cumulative GPA. In fact, a series of paired-sample t-tests confirmed that the difference between GPA in the course and cGPA was statistically significant amongst students in each faculty ( $p < .01$ ). However, where the students' performance in the course was better than their cGPA for the majority of the students, it was reversed for students in the faculty of Fine Arts,  $M = 2.23$ ,  $SD = 1.35$ ,  $M_{cGPA} = 2.77$ ,  $SD_{cGPA} = 0.74$ ,  $t_{(30)} = -2.93$ ,  $p < .01$ .

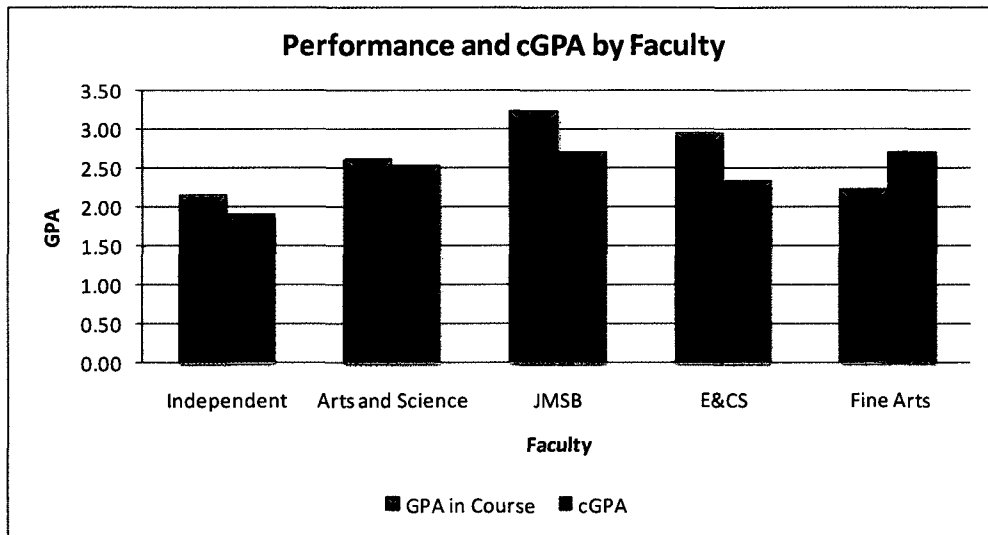


Figure 15. Performance and cGPA by Faculty

## Language

English (68.0%) was the prevalent first-language among the students enrolled in the three courses, with a non-official language second (22.6%), followed by French (9.4%). Although no main effects were found involving languages among the other covariates, a significant difference was detected when the individual courses were compared to each other,  $\chi^2_{(4, N = 1570)} = 20.01, p < .01$ . As Figure 16 shows, a higher proportion of French-speaking students were enrolled in the finance course, and one-quarter of the chemistry students spoke a non-official first language. Possibly related to this was the fact that a main effect was found between the source of the student and the course they were enrolled in,  $\chi^2_{(4, N = 1570)} = 31.07, p < .01$ . A higher proportion of international students were enrolled in chemistry (14.1%) when compared to finance (9.9%) and religion (4.7%). The religion class was comprised of more students from the CEGEP system (66.0%) than chemistry (54.9%) and finance (53.8%).

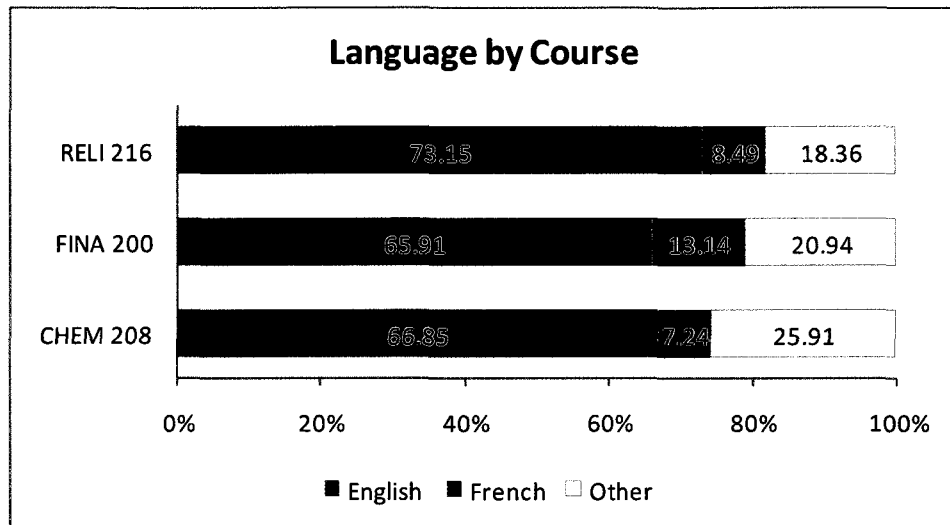


Figure 16. Language by Course

A one-way ANOVA for performance in the course did not find significant differences between the students based on their language ( $F_{(2,1375)} = 1.07, p = .345$ ), despite the fact that students who did not speak English or French as their first-language outperformed the other students (Figure 17). However, a main effect was found for their cumulative GPA ( $F_{(2,1567)} = 4.13, p = .016$ ) and a *post hoc* test (Tukey HSD) determined that students who did not speak English or French as their primary language had a lower cGPA than English-speaking students ( $p = .012$ ).

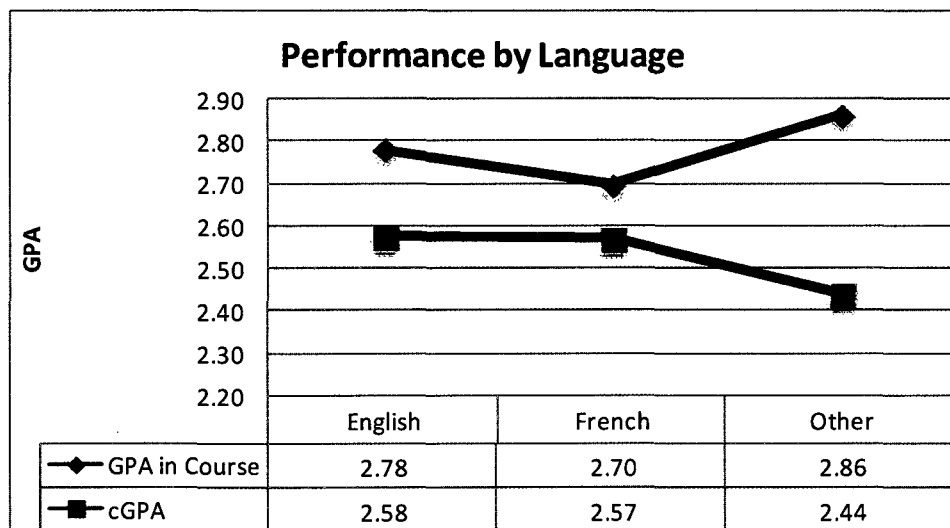


Figure 17. Performance by Language



Previous dropout behaviour did not differ among the primary languages spoken by the students enrolled in the online courses,  $F_{(2,1567)} = 1.42$ ,  $p = .242$ , although students who did not list English or French as their first language had the highest rate of previous DISCs.

## University Experience

Several different measures were used in an attempt to gauge the experience of the student within the university. One such measure involved the number of years that a student has been enrolled in their programme of study. As seen in Table 17, the majority of the students who enrolled in an online course were in their first three years in the programme (69.7%), with the highest frequency being in their second year (28.5%). On average, students enrolled in the online courses were in the third year of their programme ( $M = 2.91$ ,  $SD = 1.81$ ).

A one-way ANOVA proved to be positive for a main effect between the amount of years that a student had been enrolled in their programme of study and their CRC score ( $F_{(5,891)} = 8.19$ ,  $p < .01$ ), their cumulative GPA ( $F_{(5,1564)} = 14.12$ ,  $p < .01$ ), and their subsequent performance in the course ( $F_{(5,1372)} = 3.60$ ,  $p < .01$ ).

Tukey HSD *post hoc* tests confirmed that students who were in their sixth year or more of their programme had significantly lower CRC scores than everyone else ( $p < .05$ ). In addition, students in their third year in their programme had higher CRC scores than those in their first year ( $p < .01$ ). In fact, the pattern that emerged from this data showed increasing CRC scores among the students starting from year one, peaking during year three, and gradually declining every following year until reaching its lowest value in year six or more.

As can be seen in Figure 18, the cGPA of students enrolled in the online courses peaked in the fourth year of their programme before declining dramatically over the following years. The difference between the cGPA of the students based on their year of study was found to be statistically significant using a one-way ANOVA,  $F_{(5,1564)} = 14.12$ ,  $p < .01$ . A Tukey HSD *post hoc* test concluded that students in the first year in their programme had a significantly lower cGPA

than students in years two through five ( $p < .05$ ). Similarly, students in their sixth year or more had lower cGPA scores than those in years three and four ( $p < .05$ ), and students in the fourth year of their programme also had better cGPA scores than those their second year ( $p < .01$ ).

The performance of the students in the course varied according to their year of study, and this was confirmed with a one-way ANOVA,  $F_{(5,1372)} = 3.60$ ,  $p < .01$ . A *post hoc* Tukey HSD test identified that students in the first year of their programme did not perform as well as those in years two through four ( $p < .05$ ). As can be seen in Figure 18, the performance of the students in the online courses somewhat mimics the pattern created by the cGPA. This meant that performance in the online course was related to the individual's performances at the university, and the longer the individual had been at the university, the better his or her performance in the course.

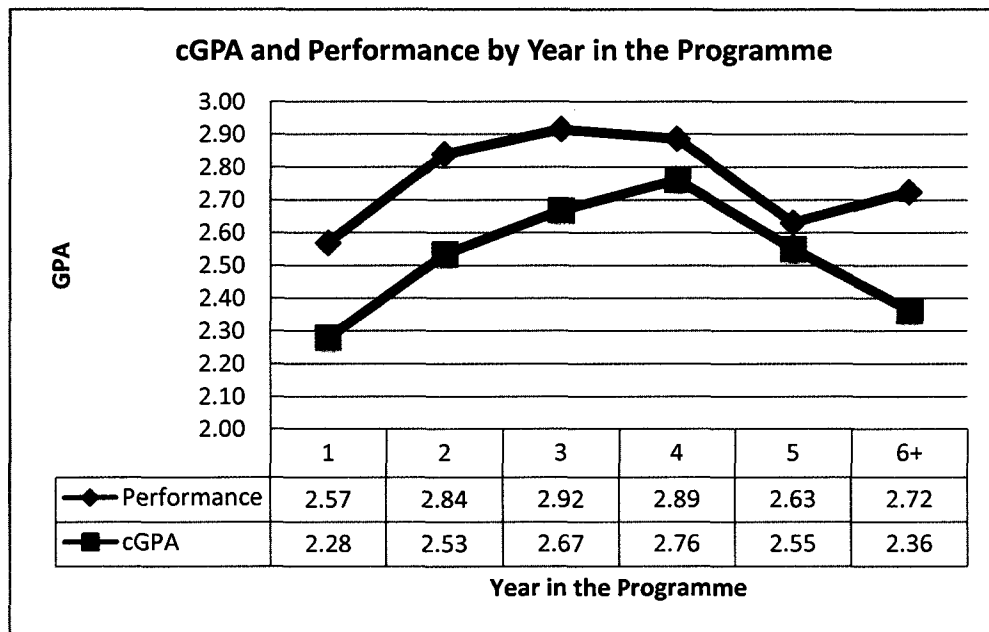


Figure 18. Cumulative GPA and Performance by Year in the Programme

The amount of years that a student has been in their programme has also affected the number of times that they have previously dropped out of a course at the university. A one-way ANOVA,  $F_{(5,1564)} = 13.97$ ,  $p < .01$ , followed by a Tukey HSD *post hoc* test, confirmed that students who

were in at least their fifth year in the programme had dropped out of more courses than all less-experienced students,  $p < .01$ .

Another way of measuring the experience of the students at the university level is to calculate how much of their programme of study they have completed. As seen in Table 17, students in the final stages of their programme of study (80% or more completed) represented the highest frequency of students enrolled in the online courses (28.6%). However, every category was well represented and there was no clear consensus as to the nature of the students enrolled in the course when comparing the percentage of their programme that they had completed ( $M = 54.74$ ,  $SD = 31.31$ ).

As was the case with the years that they had been in the programme, students' CRC scores ( $F_{(4,879)} = 10.40$ ,  $p < .01$ ), their cumulative GPA ( $F_{(4,1466)} = 43.56$ ,  $p < .01$ ), and their subsequent performance in the course ( $F_{(4,1300)} = 12.09$ ,  $p < .01$ ), were all found to be statistically significant for differences based on how much of a programme they had completed. A *post hoc* Tukey HSD test found that students who were in the early stages of their degree (less than 40% completed) had lower CRC scores than students who were more advanced in their programme ( $p < .05$ ).

In addition, students in the earliest stage of their programme (less than 20% completed), had the lowest cGPAs among all students ( $p < .01$ ), and those in the "20 to under 40% complete" category had lower grades than students in the more advanced stages of the degree ( $p < .01$ ). On the other hand, individuals who had completed 80% or more of their degree requirements had a better cGPA than all other students ( $p < .05$ ). This trend was further validated using correlational analysis which identified a significantly positive relationship between a student's cGPA and the degree requirements,  $r_{(1471)} = 0.321$ ,  $p < .01$ . As demonstrated in Figure 19, the performance of the students (overall and in the class itself) increased the closer they got to the fulfillment of their degree requirements.

The performance of the students in the course based on how much of their programme they have completed follows a similar pattern to cGPA (Figure 19). The closer a student was to completing their degree requirements, the better they would perform in the online course, and the higher their cumulative GPA. Students in the first stages of their programme (less than 20% completed) did not perform as well in their online course as compared to students who had completed more than 40% of their degree ( $p < .01$ ).

In contrast to the finding involving the amount of years that they had been in the programme, a one-way ANOVA did not find a main effect between the number of previous courses dropped and the percentage of the programme completed by the student,  $F_{(4,1466)} = 0.92$ ,  $p = .451$ .

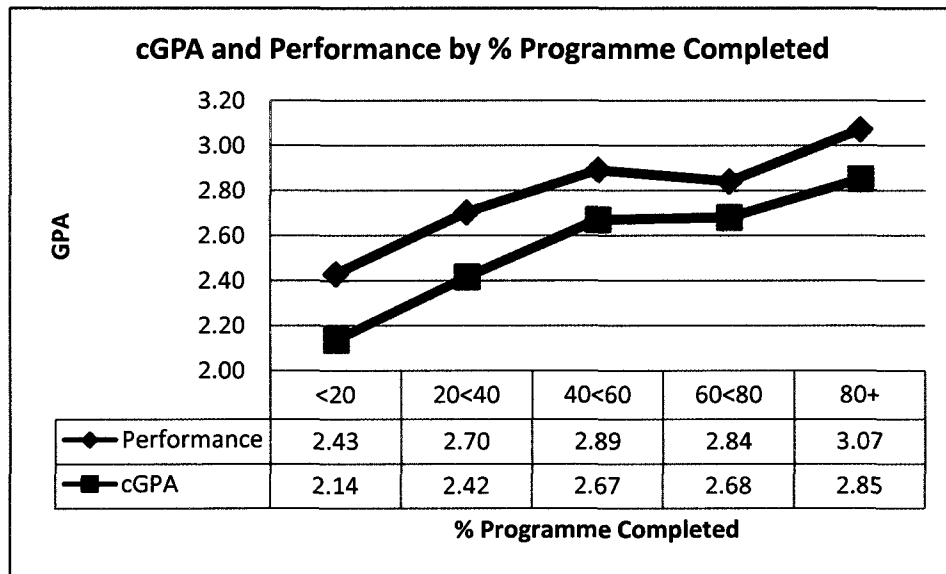


Figure 19. Cumulative GPA and Performance by % of the Programme Completed

## Performance

The academic performance of the students prior to post-secondary studies can be measured using the CRC score. Academic institutions rely on pre-entry measures such as the CRC scores to compare students in terms of their perceived academic strength, with the assumption that stronger students will be more likely to prevail in higher education than weaker ones. Of the 897

students in this study who attended CEGEP, the average CRC score was 24.51 with a standard deviation of 4.05.

However, once students are at the university, their performance can be monitored using the cumulative grade-point average (cGPA). When converted to a letter grade, the cumulative GPA (cGPA) of all the students enrolled in the three courses was between a C+ and a B- ( $M = 2.54$ ,  $SD = 0.79$ ). The majority of the students had a B average by the time the semester ended (45.7%) with B- being the most popular grade (19.0%), followed by C+ (17.4%).

Since this study investigated the fate of students enrolled in individual courses, the performance of the students in those same courses should be considered. Overall, the students who persisted in their respective online courses attained a GPA of 2.79<sup>8</sup> (A-), with a standard deviation of 1.15. A one-way ANOVA based on the performance in the individual courses identified the presence of a main effect,  $F_{(2,1375)} = 50.74$ ,  $p < .01$ . A *post hoc* Tukey HSD test confirmed that students enrolled in the chemistry course ( $M = 3.04$   $SD = 1.03$ ) had better grades than those enrolled in finance ( $M = 2.34$   $SD = 1.27$ ) or religion ( $M = 2.82$   $SD = 1.06$ ),  $p < .05$ . It was also found that students in the religion course had higher grades than those in finance,  $p < .01$ .

Although it is not a measure of performance per se, dropping out of a course nonetheless represents the end result of a voluntary decision taken by the student upon the realization, for whatever reason, that they will be unable to fulfill the requirements of the course. Furthermore, since this measure will be scrutinized in more detail in later analyses, exploring the past behaviour of the students with regards to dropout was deemed to be noteworthy.

It was found that the majority of the students enrolled in the online courses had never dropped out of a course at Concordia University (88.8%). The remaining students, who had previously withdrawn from a course, included 3.9% who had withdrawn from one course, 1.7% who had

---

<sup>8</sup> This measure does not include students who dropped out of the course since this does not affect GPA.

discontinued from two, and 5.6% who had dropped out of three or more courses. In fact, 12 students (0.8%) had previously dropped out of ten or more courses, including one individual who had previously discontinued 18 courses.

The CRC scores represent a student's relative performance prior to coming to Concordia (if they went to CEGEP), whereas the cGPA measures their performance at the university up to that point in time. The link between these scores and a student's performance in the online course was investigated prior to looking at their possible effects on attrition.

As seen in Table 25, there was a significant positive correlation between the two measures for the prior academic performance of the students (cGPA and CRC), as well as a positive correlation between these measures and the performance of the students in their online course. In other words, the better the CRC score, the higher the students' cGPA. In addition, the higher CRC and cGPA scores translated into a better performance in their online course. Therefore, the CRC and cGPA seemed to be good indicators of future performance in the course.

Table 25. Correlation Matrix for Prior and Current Academic Performance

Measure	1	2	3
1. CRC (N = 897)		.426**	.351**
2. cGPA (N = 1570)			.620**
3. GPA in course (N = 1378)			

\*\*  $p < .01$

The number of prior dropouts was also found to differ (using a one-way ANOVA) based on a student's CRC scores,  $F_{(4,892)} = 5.97$ ,  $p < .01$ . A *post hoc* test using the Tukey HSD method determined that students in the lowest CRC quintile group had significantly more previous DISCs than all other students ( $p < .05$ ). As the CRC score increased, the number of previous dropouts decreased. In fact, a correlational analysis found a statistically significant negative relationship between the number of previous courses dropped and the student's CRC score,  $r_{(897)} = -0.12$ ,  $p < .01$ . Likewise a weaker, but statistically significant, negative correlation was found between the cGPA of the students and their previous dropout behaviour,  $r_{(1570)} = -0.06$ ,  $p < .05$ .

A paired sample t-test confirmed that the performance of the students in the online course was better than their cumulative GPA,  $M = 2.79$ ,  $SD = 1.15$ ,  $M_{cGPA} = 2.59$ ,  $SD_{cGPA} = 0.76$ ,  $t_{(1377)} = 8.23$ ,  $p < .01$ . Students who completed their online course were typically awarded a grade that would increase their cGPA.

## Registration Dropouts

### *Demographic Data*

Among all of the courses offered by eConcordia during the fall of 2007, there were 4652 enrolments at the DNE deadline, and 3967 enrolments by the deadline for academic withdrawal (DISC). This means that a total of 685 students dropped out of their online course, which translates into a retention rate of 85.3%. Of all the students enrolled in the three courses under investigation, a total of 184 dropped out by the academic withdrawal deadline (DISC), thereby yielding an attrition rate of 11.7% (or retention rate of 88.3%). The following section focuses on the students who decided to drop out of one of the three online courses under investigation.

Before one can attempt to make generalizations about the nature of the students who drop out of their online course, the overall demographics of the enrolments must be considered. Thus, instead of examining the overall figures, the analysis of the individual characteristics on persistence was accomplished by isolating them based on the proportion of students who dropped out. For example, at first glance, one may conclude that there was an equal amount of drop outs among students enrolled in the extended credit and mature entry programs. However, further inspection revealed that the proportion of students who dropped out of the mature students programme was more than double that of students in the extended credit programme. Hence, Table 26 displays the breakdown of the dropouts and persisters by covariate so that their individual proportions can be compared in the section that follows.

## Gender

As Table 26 shows, there was virtually no difference between males and females as it pertained to overall dropout behaviour. This was confirmed using an independent samples t-test<sup>9</sup>,  $M_F = .12$ ,  $SD_F = 0.32$ ,  $M_M = .12$ ,  $SD_M = 0.32$ ,  $t_{(1568)} = .114$ ,  $p = .909$ . This finding was also reproduced when the courses were investigated separately.

Despite the fact that more men studying full-time tended to drop out of their online course than full-time women, an independent samples t-test among the full-time students did not find the distinction between the genders statistically significant,  $M_F = .07$ ,  $SD_F = 0.25$ ,  $M_M = .09$ ,  $SD_M = 0.29$ ,  $t_{(875)} = 1.14$ ,  $p = .257$ . Similarly, the higher proportion of part-time women that withdrew compared to part-time men was not found to be statistically significant using an independent samples t-test,  $M_F = .19$ ,  $SD_F = 0.39$ ,  $M_M = .14$ ,  $SD_M = 0.35$ ,  $t_{(691)} = 1.65$ ,  $p = .100$ .

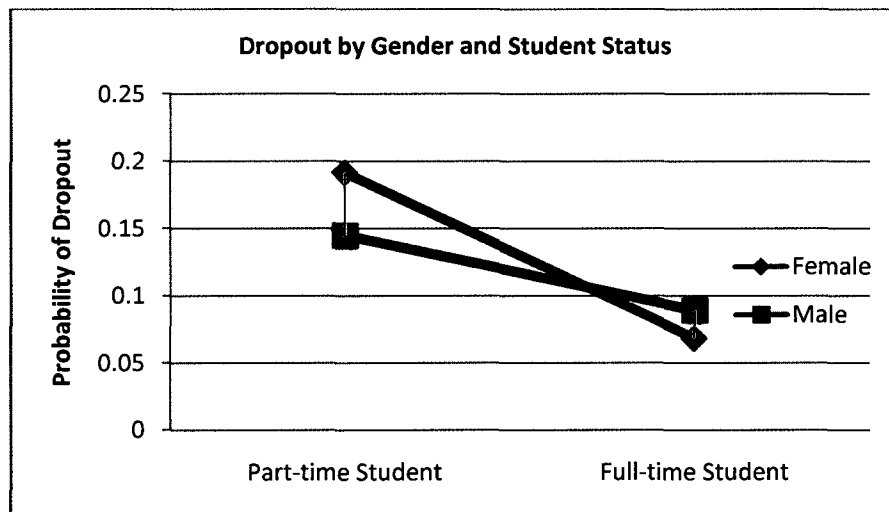


Figure 20. Dropout by Gender and Student Status

When females were isolated, an independent samples t-test found that a higher proportion of part-time students dropped out as compared to full-time students,  $M_{PT} = .19$ ,  $SD_{PT} = 0.39$ ,  $M_{FT} = .07$ ,  $SD_{FT} = 0.25$ ,  $t_{(828)} = 5.48$ ,  $p < .01$ . Similarly, males studying part-time dropped out at a higher

<sup>9</sup> A value of "1" was given to a student who dropped out, and "0" is they persisted.



pace than full-time students,  $M_{PT} = .14$ ,  $SD_{PT} = 0.35$ ,  $M_{FT} = .09$ ,  $SD_{FT} = 0.29$ ,  $t_{(738)} = 2.37$ ,  $p = .018$ . When dropouts were analyzed by gender controlling for full/part-time status using a MANOVA, an interaction effect was identified,  $F_{(1,1566)} = 4.31$ ,  $p = .038$  (Figure 20). Although there was a higher proportion of full-time male students who dropped out when compared to females, it was found that this trend was reversed among part-time students.

## Age

The average age of students who dropped out was 24.3 years ( $SD = 5.5$ ) with the majority of them being in the 21-24 year-old age group (52.7%). An independent samples t-test determined that individuals who withdrew from their course tended to be older than those who did not ( $M_p = 22.96$ ,  $SD_p = 4.41$ ,  $M_{DO} = 24.34$ ,  $SD_{DO} = 5.49$ ,  $t_{(1568)} = 3.84$ ,  $p < .01$ )<sup>10</sup>. In a further analysis of the student age groups, a one-way ANOVA was found to be significant for their respective attrition rates,  $F_{(5,1564)} = 4.98$ ,  $p < .01$ . A *post hoc* test (Tukey HSD) concluded that individuals who were at least 26 years-old were more likely to drop out than all the younger age groups ( $p < .05$ ), with the exception of those in the 24-25 age group. In fact, as can be seen in Figure 21, the mean dropout rate amplified as of the 23-year-old age group.

When investigating dropout behaviour based on student status and age group, a MANOVA was not found to be significant for interactions, ( $F_{(5,1546)} = 2.41$ ,  $p = 0.179$ ). However, as can be seen in Figure 22, there was a widening gap in the dropout rate between part-time and full-time students as the age of the student increased. In fact, the dropout rate among part-time students was double that of full-time students in the 23-year-old age group and almost triple by the time the student was 26 years-old or more. While the attrition rate among part-time students increased with age, in contrast, the attrition rate of full-time students remained relatively constant regardless of the age group.

---

<sup>10</sup> For the purposes of these comparisons,  $p$  = statistics for students who persisted,  $do$  = statistics for students who dropped out.

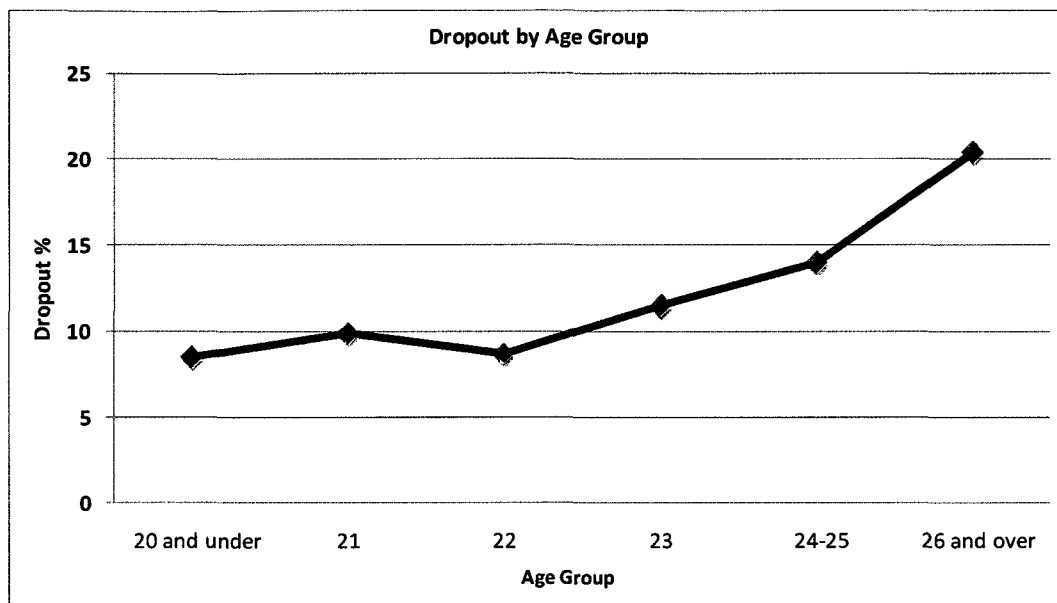


Figure 21. Dropout by Age Group

This difference was confirmed with a one-way ANOVA in which the student status was controlled. In the case of full-time students no effect was found between drop out and age,  $F_{(5,865)} = 0.14$ ,  $p = .983$ . On the other hand, the same test conducted on part-time students yielded a main effect,  $F_{(5,681)} = 2.26$ ,  $p = .047$ , and a *post hoc* test (Tukey HSD) confirmed that students in the 26 and over age group were more likely to drop out than those in the 22-year-old age group ( $p = .031$ ).

With regards to the individual courses, students who dropped out of the chemistry course were older than the ones who persisted ( $M_p = 22.27$ ,  $SD_p = 0.50$ ,  $M_{DO} = 23.67$ ,  $SD_{DO} = 0.51$ ,  $t_{(716)} = 2.29$ ,  $p = .022$ ), but this finding did not transfer to the age groups,  $F_{(5,712)} = 0.72$ ,  $p = 0.610$ . Despite the fact that the mean dropout rates increased with the age of the students in the finance and religion courses, neither their individual age, nor their age groups proved to be significantly different for their retention rate according to a one-way ANOVA.

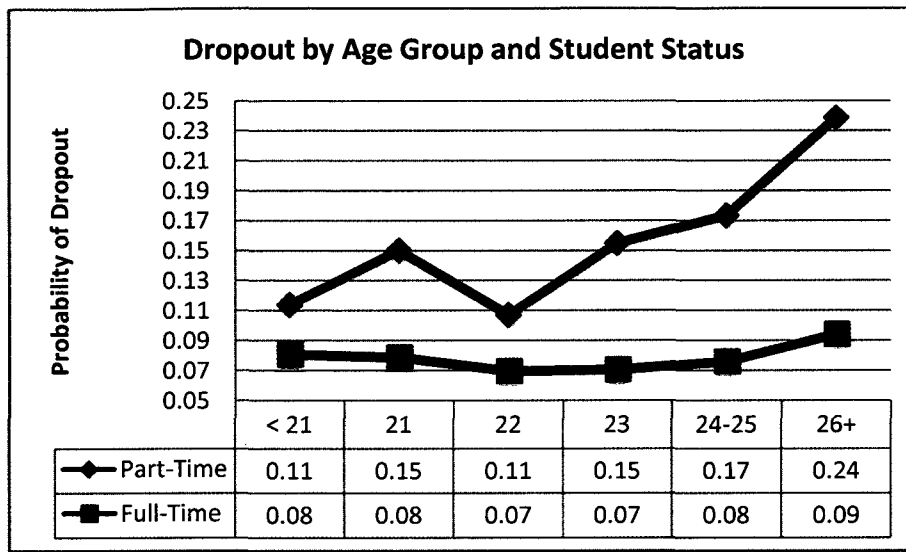


Figure 22. Dropout by Age Group and Student Status

## Student Status

A significantly larger proportion of part-time students dropped out of their online course when compared to those enrolled on a full-time basis using an independent samples t-test,  $M_{FT} = 0.08$ ,  $SD_{FT} = 0.27$ ,  $M_{PT} = 0.17$ ,  $SD_{PT} = 0.37$ ,  $t_{(1568)} = 5.55$ ,  $p < .01$ . As seen in Table 26, the proportion of part-time students who dropped out of their online course was more than double that of full-time students.

There seemed to be an important rise in the dropout rate of female students as of the age of 23, whereas the increase for males occurred as of the age of 26. However, when gender and the age of the student were analyzed for differences in the attrition rate, a MANOVA did not find a statistically significant interaction,  $F_{(5,1558)} = 0.94$ ,  $p = 0.457$ .

Females studying part-time experienced a marked increase in their dropout rate as of the age of 23-years-old (Figure 23). Similarly, male part-time students experienced an increase in dropout rates as they reached 24-years of age and older. Conversely, full-time female students had relatively stable attrition rates regardless of their age. However, after remaining stable for the most part, the dropout rate of full-time male students increased suddenly as they reached 26-

years of age. However, no interaction effects were found when a MANOVA was conducted between gender, student status, and age group,  $F_{(5,1546)} = 0.32, p = .902$ .

When individual courses were investigated, the religion ( $M_{FT} = 0.14, SD_{FT} = 0.35, M_{PT} = 0.27, SD_{PT} = 0.45, t_{(363)} = 3.17, p < .01$ ) and finance ( $M_{FT} = 0.10, SD_{FT} = 0.31, M_{PT} = 0.23, SD_{PT} = 0.42, t_{(485)} = 3.74, p < .01$ ) courses confirmed the difference between full-time and part-time students, whereas the chemistry course did not ( $M_{FT} = 0.03, SD_{FT} = 0.18, M_{PT} = 0.05, SD_{PT} = 0.23, t_{(716)} = 1.23, p = .220$ ).

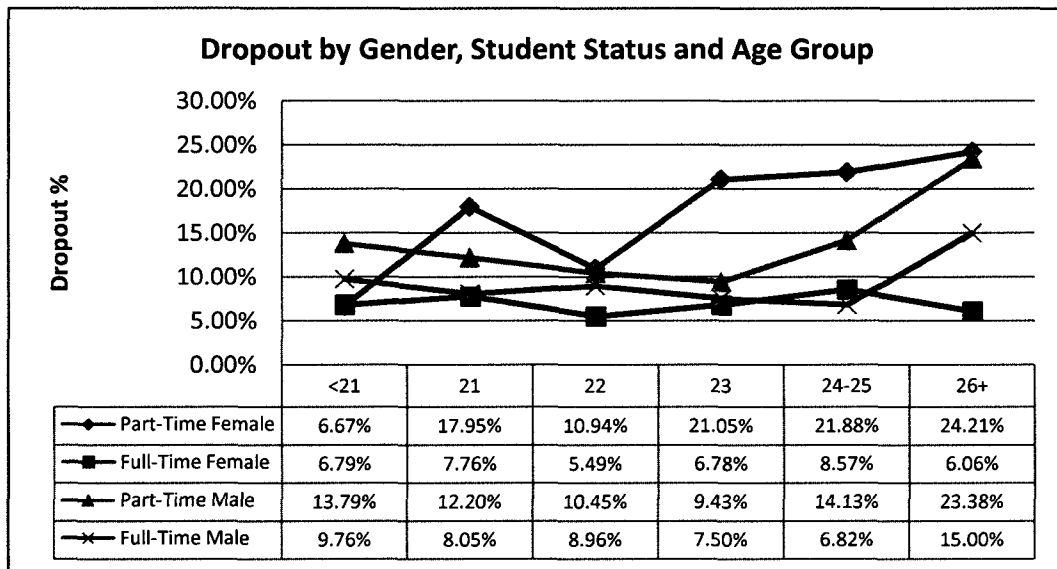


Figure 23. Dropout by Gender, Student Status, and Age Group

## Faculties

As Table 26 and Figure 24 illustrate, students from the faculty of Fine Arts (29.5%) and independent students (24.2%) exhibited the highest dropout rates, whereas individuals enrolled in programmes in the JMSB had the lowest rate (6.1%). A one-way ANOVA comparing students by their faculty of study (including independent students) exhibited a main effect ( $F_{(4,1565)} = 10.97, p < .01$ ), and a *post hoc* test (Tukey HSD) suggested that independent students and those from the faculty of Fine Arts were more likely to drop out of their online course than students from Arts and Science and the JMSB ( $p < .01$ ). Further analysis revealed that the proportion of

students from the faculty of Arts and Science that dropped out was greater than that of students in the JMSB ( $p < .01$ ).

When the courses were investigated separately, a one-way ANOVA did not prove to be significant for the chemistry course,  $F_{(4,713)} = 1.24$ ,  $p = .293$ . However, students enrolled in the finance ( $F_{(4,482)} = 2.52$ ,  $p = .040$ ) and religion ( $F_{(4,360)} = 4.29$ ,  $p < .01$ ) courses did yield significant differences in attrition rates based on the faculty of study. Namely, in the finance course, students enrolled in the JMSB were less likely to drop out than independent students ( $p = .044$ ). In the religion course, students in Arts and Science were less likely to drop out than those in Fine Arts ( $p = .038$ ) and independent students ( $p = .020$ ).

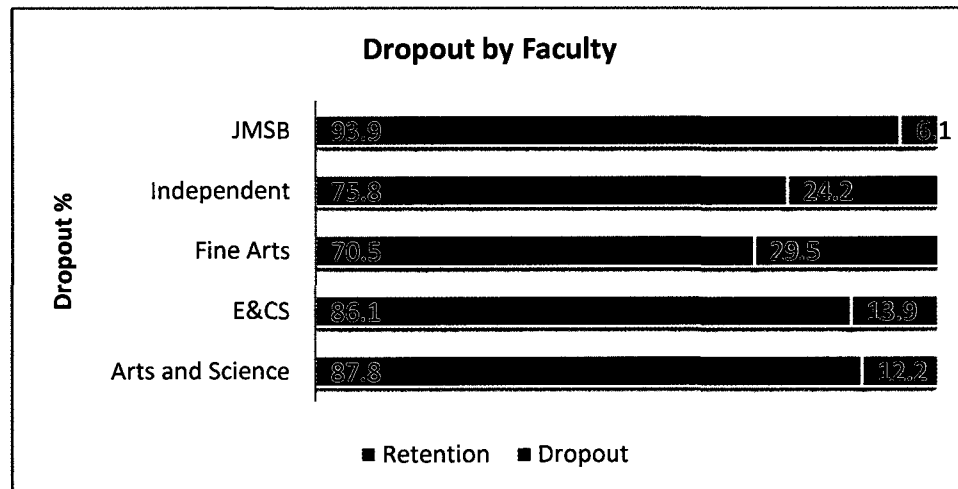


Figure 24. Dropout by Faculty

## Programme Preference

When persisters and dropouts were compared based on their programme preference upon applying to the university, an independent samples t-test proved to be significant<sup>11</sup>,  $M_p = 1.44$ ,  $SD_p = 0.87$ ,  $M_{DO} = 1.60$ ,  $SD_{DO} = 1.02$ ,  $t_{(1559)} = 2.18$ ,  $p = .030$ . This meant that students who dropped out were more likely to be enrolled in a programme that was not their first choice. However, when the choices were analyzed and compared separately using a one-way ANOVA, no

<sup>11</sup> 1 = first choice, 2 = second choice, etc...

significant difference was found,  $F_{(2,1558)} = 1.90$ ,  $p = .150$ . Therefore, although there was a noticeable increase in the rate of attrition based on the student's preferred programme and whether or not they were enrolled in it, the variation was not found to be statistically significant.

An interaction effect was discovered with regards to programme preference and full-time/part-time status using a MANOVA,  $F_{(2,1555)} = 4.71$ ,  $p < .01$ . Individuals who were enrolled full-time in their preferred programme were less likely to decide to withdraw from their course, but as the preference in the program decreased, the attrition rate increased (Figure 25). For part-time students, however, the attrition rate decreased slightly as they were admitted into less favourable programs. A *post hoc* test (Tukey HSD) did not find any significant comparisons.

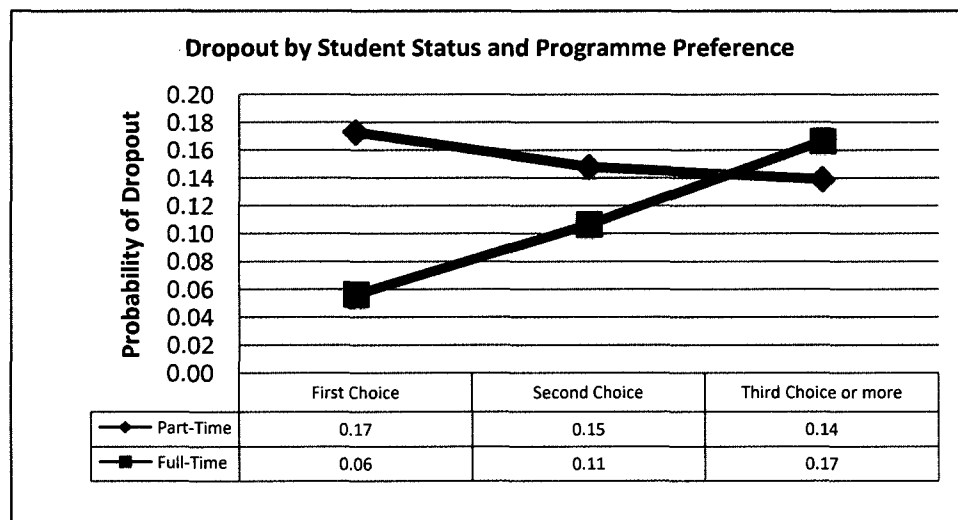


Figure 25. Dropout by Student Status and Programme Preference

Based on the positive interaction effect between student status and choice of programme, an additional ANOVA was carried out that controlled for student status. Although the ANOVA did not determine the presence of a main effect among part-time students,  $F_{(2,681)} = 0.42$ ,  $p = .660$ , it was positive for individuals studying full-time,  $F_{(2,874)} = 8.92$ ,  $p < .01$ . A *post hoc* test using the Tukey HSD method found that students who were admitted to their third preference of programme (or more) were more prone to dropping out of their online course than students

enrolled in their first choice ( $p < .01$ ). Although students enrolled in their preferred programme were twice as likely to persist in their course as those who were in their second choice, the difference between the two was not found to be statistically significant ( $p = .117$ ).

Table 26. Comparison of Student Dropout and Persistence

Variable	Persisted	Dropped Out	Variable	Persisted	Dropped Out
<b>Gender</b>			<b>Years in Programme*</b>		
Female	732 88.2%	98 11.8%	One	268 87.0%	40 13.0%
Male	654 88.4%	86 11.6%	Two	400 89.5%	47 10.5%
<b>Student Status**</b>			Three	303 89.4%	36 10.6%
Full-Time	809 92.2%	68 7.8%	Four	250 90.9%	25 9.1%
Part-Time	577 83.3%	116 16.7%	Five or more	165 82.1%	36 17.9%
<b>First Language</b>			<b>CRC Percentile**</b>		
English	945 88.5%	123 11.5%	< 20 <sup>th</sup> percentile	139 77.7%	40 22.3%
French	126 85.7%	21 14.3%	20 <sup>th</sup> < 40 <sup>th</sup> percentile	159 88.8%	20 11.2%
Other	315 88.7%	40 11.3%	40 <sup>th</sup> < 60 <sup>th</sup> percentile	165 91.7%	15 8.3%
<b>Age Group**</b>			60 <sup>th</sup> < 80 <sup>th</sup> percentile	159 88.8%	20 11.2%
Under 21	301 91.5%	28 8.5%	80 <sup>th</sup> percentile or +	169 93.9%	11 6.1%
21 to 24	813 89.3%	97 10.7%	<b>Percent of Programme Completed*</b>		
25 to 30	217 82.8%	45 17.2%	< 20%	200 84.7%	36 15.3%
31 and over	55 79.7%	14 20.3%	20% to < 40%	259 86.3%	41 13.7%
<b>Faculty**</b>			40% to < 60%	240 90.6%	25 9.4%
Arts and Science	819 87.8%	114 12.2%	60% to < 80%	225 90.0%	25 10.0%
JMSB	430 93.9%	28 6.1%	80% and over	387 92.1%	33 7.9%
Independent	75 75.8%	24 24.2%	<b>Credits Completed**</b>		
Fine Arts	31 70.5%	13 29.5%	30 and under	376 81.9%	83 18.1%
E&CS	31 86.1%	5 13.9%	31 to 60	428 89.7%	49 10.3%
<b>Immigration Status</b>			61 to 90	372 91.0%	37 9.0%
Canadian	1233 87.8%	171 12.2%	91 and over	210 93.3%	15 6.7%
International	153 92.2%	13 7.8%	<b>Cumulative GPA**</b>		
<b>Program Type*</b>			A	141 94.0%	9 6.0%
Regular	1012 88.3%	134 11.7%	B	653 91.1%	64 8.9%
Extended Credit	265 91.4%	25 8.6%	C	492 85.9%	81 14.1%
Mature Entry	109 81.3%	25 18.7%	D	79 84.0%	15 16.0%
<b>Source</b>			F	21 58.3%	15 41.7%
CEGEP	791 88.2%	106 11.8%	<b>Previous DISC**</b>		
Other	442 87.2%	65 12.8%	0	1341 96.2%	53 3.8%
International	153 92.2%	13 7.8%	1 or 2	28 31.8%	60 68.2%
<b>Programme Preference</b>			3 or more	17 19.3%	71 80.7%
First choice	1013 89.3%	122 10.7%			
Second choice	215 87.4%	31 12.6%			
Third choice or more	152 84.4%	28 15.6%			

Note: Main effect detected  $p < .01^{**}$ ,  $p < .05^{*}$

## Program Type

As seen in Table 26, students enrolled at the university as a mature entry had an 18.7% dropout rate, compared to 11.7% for regular programme students and 8.6% for those in the extended credit programme. A one-way ANOVA identified a main effect between attrition and the type of program in which the students were enrolled,  $F_{(2,1567)} = 4.48$ ,  $p = .011$ . A Tukey HSD *post hoc* test identified students that were enrolled in a mature entry program as being more likely to drop out of their course than students in the regular ( $p = .046$ ) or extended credit ( $p < .01$ ) programmes. There was no significant difference identified in the dropout behaviour between students in the extended credit and regular programmes ( $p = .313$ ). However, when the courses were investigated separately, an ANOVA did not identify main effects in any of the cases.

Using a MANOVA, an interaction effect was uncovered for the dropout behaviour of students when controlled for program type and age,  $F_{(32,1497)} = 1.78$ ,  $p < .01$ . In essence, the older the student was, the more likely they were to be a mature student, and consequently, the higher the chances that they had dropped out of their online course.

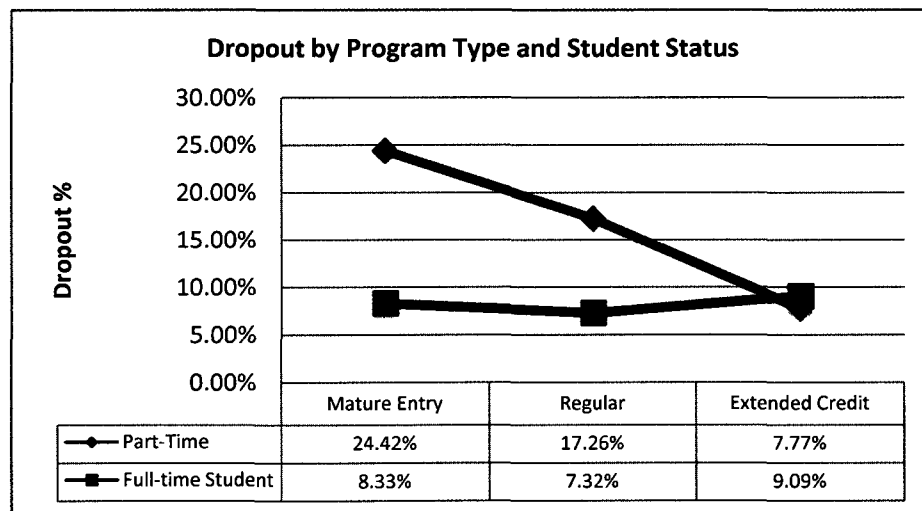


Figure 26. Dropout by Program Type and Student Status

An additional interaction effect was pinpointed using a MANOVA between student status and the type of programme as it pertained to attrition,  $F_{(2,1564)} = 4.34$ ,  $p = .013$ . As can be seen in



Figure 26, students enrolled part-time in the mature entry programme experienced a dropout rate of almost 25%, which is three times that of full-time students in the same programme. Similarly, part-time students in the regular programme had dropout rates that were more than double that of full-time students, but the attrition rate is equivalent to full-time students in the extended credit programme. No interaction effects were identified for dropout behaviour via a MANOVA between gender and the type of programme in which the student was enrolled,  $F_{(2,1564)} = 0.19, p = .827$ .

### **Immigration Status and Source to University**

When students were analyzed for their dropout behaviour based on their immigration status, international students had lower attrition rates than students with Canadian citizenship. However, the difference between the dropout rates of students based on their immigration status (Canadian or International)<sup>12</sup> was not found to be statistically significant,  $M_p = 0.11, SD_p = 0.31, M_{DO} = 0.07, SD_{DO} = 0.26, t_{(1568)} = 1.65, p = .100$ .

Similarly, students who came from International institutions to Concordia had lower attrition rates (7.8%) than those who came from the province's CEGEP system (11.8%), as well as other Canadian institutions (12.8%). But once again, this difference was not found to be statistically significant,  $F_{(2,1567)} = 1.51, p = .220$ .

### **Language**

Students who responded that their first language was French had the highest dropout rate (14.3%). However, no significant differences were found between the dropouts and the students who persisted with regards to their first language (English, French, or other) when analyzed using a one-way ANOVA,  $F_{(2,1567)} = 0.52, p = .593$ .

---

<sup>12</sup> Canadian coded as "0", International as "1"

## Performance

Of the students who went through the CEGEP system and dropped out of their online course, 37.7% of them had CRC scores in the 5<sup>th</sup> quintile (less than the 20<sup>th</sup> percentile), 18.9% were in the 4<sup>th</sup> quintile, and 10.4% were in the first quintile (80<sup>th</sup> percentile and over). Students who dropped out had an average CRC score of 23.0, with a standard deviation of 4.4. The majority of students who dropped out of their online course had a cumulative GPA in the C range (44.0%), although the highest frequency of students had a cGPA of B- (17.4%). Students who dropped out had a mean cGPA of 2.2 (between a C and C+), with a standard deviation of 0.9.

Overall, students who persisted in their course had higher CRC scores than those who dropped out ( $M_p = 24.71$ ,  $SD_p = 3.97$ ,  $M_{DO} = 22.98$ ,  $SD_{DO} = 4.37$ ,  $t_{(895)} = 4.17$ ,  $p < .01$ ). In addition, students in the lowest CRC percentile group had the highest dropout rate at 22.3%, whereas those in the highest grouping had the lowest rate at 6.1% (Table 26). A further analysis involving CRC scores grouped into quintiles using a one-way ANOVA yielded a main effect,  $F_{(4,892)} = 6.90$ ,  $p < .01$ , and a Tukey HSD *post hoc* test identified students in the 5<sup>th</sup> quintile group (the lowest CRC scores) as having a significantly greater attrition rate than any other group ( $p < .01$ ). There were no effects identified amongst the other CRC groupings.

A one-way ANOVA proved to be significant for differences in the dropout rate among full-time learners,  $F_{(4,521)} = 2.51$ ,  $p = .041$ , as well as with part-time students,  $F_{(4,366)} = 2.43$ ,  $p = .047$ . In both cases, students in the lowest CRC grouping had the highest dropout rate among all students ( $M_{FT} = .15$ ,  $SD_{FT} = .36$ ,  $M_{PT} = .26$ ,  $SD_{PT} = .44$ ), although a Tukey HSD *post hoc* test could not determine statistically significant individual differences amongst them.

A similar analysis conducted on each course yielded no significant differences for chemistry ( $F_{(4,389)} = 1.07$ ,  $p = .372$ ) or religion ( $F_{(4,236)} = 2.06$ ,  $p = .088$ ). However the finance course resulted in a main effect ( $F_{(4,257)} = 4.30$ ,  $p < .01$ ), and a *post hoc* analysis showed that students in the lowest percentile group were more likely to drop out than those in the highest ( $p < .01$ ), as well as those in the "20 to under 40" group ( $p < .01$ ).

Students who persisted in their online course had significantly greater cGPA scores than those who dropped out, as determined by an independent samples t-test ( $M_p = 2.59$ ,  $SD_p = 0.76$ ,  $M_{DO} = 2.19$ ,  $SD_{DO} = 0.92$ ,  $t_{(1568)} = 6.49$ ,  $p < .01$ ). In addition, a one-way ANOVA proved to be positive for differences in dropout behaviour among students in the different cGPA groupings,  $F_{(4,1565)} = 11.87$ ,  $p < .01$ . A *post hoc* test using the Tukey HSD method confirmed that students with a failing cGPA were more likely to drop out of their online course than everyone else ( $p < .01$ ). In addition, students who had a cGPA in the A or B-range were more likely to persist in their online course than those with a C average ( $p < .05$ ). As shown in Figure 27, the higher the student's cGPA, the more likely the student would persist in their course.

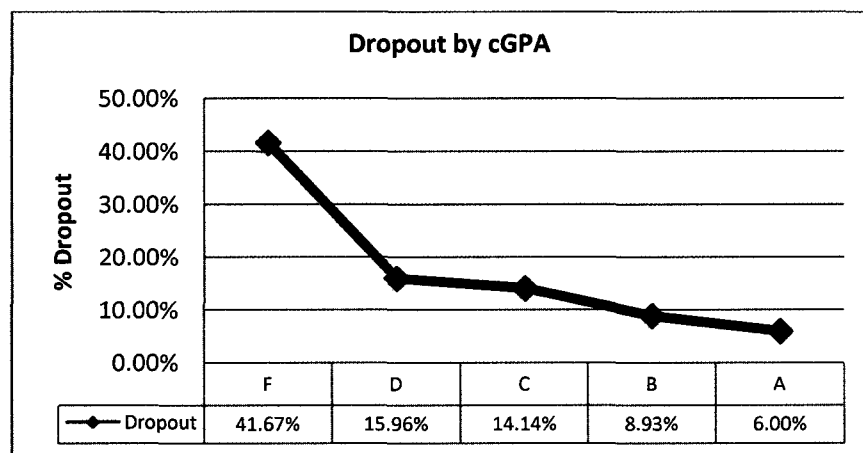


Figure 27. Dropout by cGPA

## Credits and Programme Completed

Most of the students who dropped out had completed less than 30 credits at Concordia (45.1%). Of the remaining students who withdrew from these courses, 26.6% of them had completed between 30 and 59 credits, 20.1% had done 60 to 89 credits, and the remainder (8.2%) had 90 or more credits to their record. On average, students who withdrew from their online course had completed 58.2 credits ( $SD = 38.4$ ) at the university level.

When considering how far they had progressed in their programme of study, students who discontinued their course had an average of 47.0% of their program completed by the end of that semester ( $SD = 32.3\%$ ). However, the bulk of the students were in the initial stages of their

degree. This is demonstrated by the fact that 63.8% had less than 60% of their degree requirements completed, whereas 20.6% had completed 80% or more of their programme.

Overall, students who dropped out of their online course had completed less university-level credits for their programme of study ( $M_p = 63.63$ ,  $SD_p = 32.94$ ,  $M_{DO} = 58.24$ ,  $SD_{DO} = 38.43$ ,  $t_{(1568)} = 2.04$ ,  $p = .04$ ), and had completed a smaller percentage of their programme of study ( $M_p = 0.56$ ,  $SD_p = 0.31$ ,  $M_{DO} = 0.47$ ,  $SD_{DO} = 0.32$ ,  $t_{(1469)} = 3.31$ ,  $p < .01$ ).

As shown in Table 26, students who had completed less than 30 university-level credits had a dropout rate that was at least double that of students who had completed 60 or more university credits. A one-way ANOVA for the number of credits completed proved to be statistically significant ( $F_{(4,1565)} = 6.93$ ,  $p < .01$ ) and a *post hoc* test (Tukey HSD) revealed that students who had completed the least amount of credits were more likely to drop out of their course than any other group ( $p < .01$ ).

Similarly, students who had completed fewer than 40% of their programme of study had higher dropout rates than those who were closer to completing their studies (Table 26). In fact, Figure 28 shows the proportion of dropouts was lowered as an individual gets closer to the completion of their degree. A one-way ANOVA yielded a main effect ( $F_{(4,1466)} = 2.96$ ,  $p = .019$ ), with a *post hoc* analysis (Tukey HSD) showing that students who had completed at least 80% of their programme of study were less likely to drop out than those who were in the earliest stage ( $p = .029$ ).

When the courses were investigated separately for the number of credits completed, no significant differences were found for the chemistry course ( $F_{(4,713)} = 0.78$ ,  $p = .538$ ). However, a one-way ANOVA was significant for the finance ( $F_{(4,482)} = 2.63$ ,  $p = .034$ ) and religion ( $F_{(4,360)} = 2.62$ ,  $p = .035$ ) courses, although a *post hoc* test (Tukey HSD) was unable to single out a significant individual comparison. In the case of the amount of the programme that has been completed, no ANOVAs proved to be significant when the courses were analyzed separately.

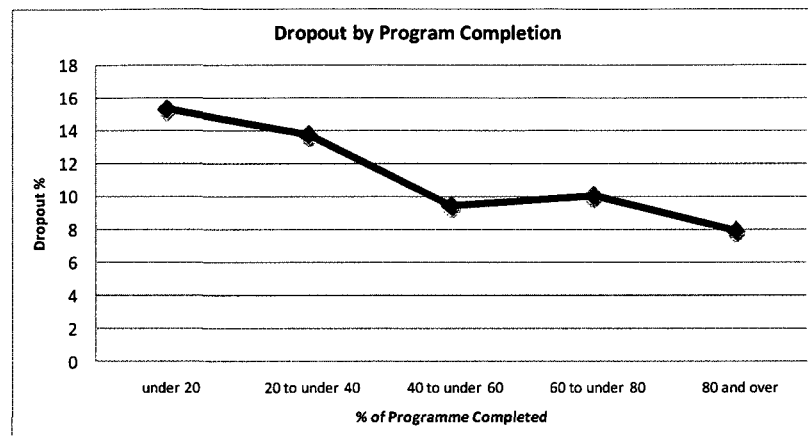


Figure 28. Dropout by Program Completion

## Years in the Programme

Of the dropouts, 40 students (21.7%) were in the first year of their programme, 47 (25.5%) in their second, 36 (19.6%) in their third, and the remaining 61 (33.2%) were at least in their fourth year. On average, students who dropped out were in their third year of the programme ( $M = 3.0$ ,  $SD = 1.8$ ).

In addition to the amount of credits and percentage of the programme that they had completed, an independent sample t-test was used to investigate possible differences in dropout behaviour based on the amount of time that a student had been enrolled in their programme. The test yielded no difference between persisters and dropouts,  $M_p = 2.90$ ,  $SD_p = 1.82$ ,  $M_{DO} = 2.98$ ,  $SD_{DO} = 1.77$ ,  $t_{(1568)} = 0.56$ ,  $p = .577$ .

However, a one-way ANOVA that analyzed the groups separately (by years in the programme) proved to be significant,  $F_{(4,1565)} = 2.71$ ,  $p = .029$ . A Tukey HSD *post hoc* test concluded that students who had been in the programme for five years or more were more likely to drop out than students who were in their fourth year ( $p = .026$ ). As can be seen in Figure 29, there was a steady decline in dropout over the first four years of the programme, followed by a sudden increase in the fifth year (or more).

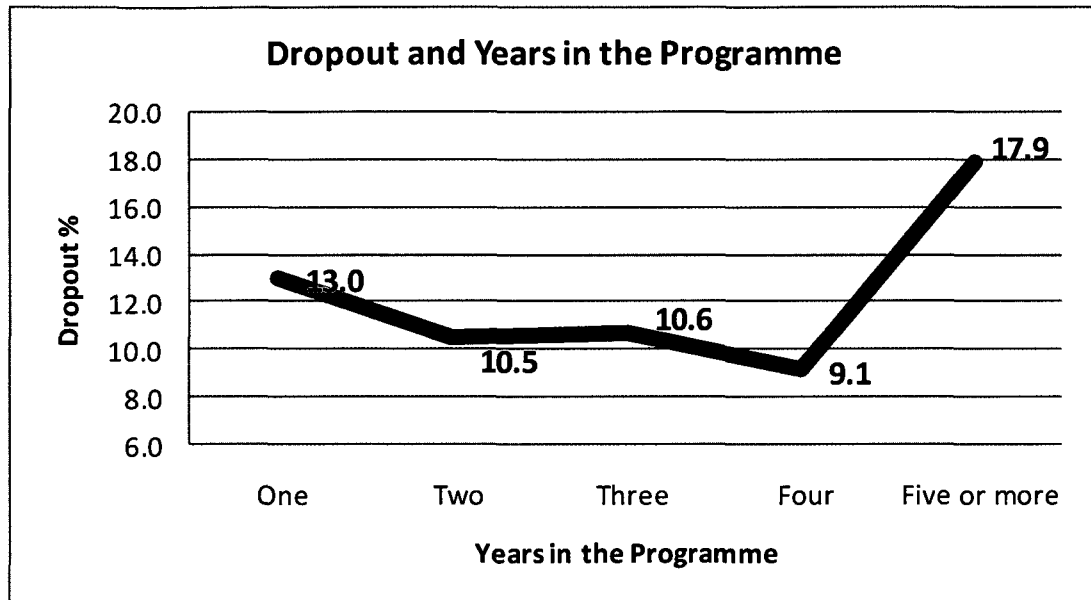


Figure 29. Dropout and Years in the Programme

## Previous Dropout

Of the students who withdrew from their course, 53 of them had never previously done so at Concordia (28.8%), whereas 60 had dropped one or two prior courses (32.6%), and the remaining 71 students had discontinued from three or more courses (38.6%). Overall, the students who did not persist in their course had done so on 2.73 prior occasions ( $SD = 3.4$ ) up to and including the current semester (but not including the online course).

The largest gap between students who persisted and those who dropped out involved their past dropout behaviour. Students who had previously discontinued from a university course, regardless of when it happened, were more likely to repeat this behaviour,  $M_p = 0.08$ ,  $SD_p = 0.56$ ,  $M_{DO} = 2.73$ ,  $SD_{DO} = 3.42$ ,  $t_{(1568)} = 26.39$ ,  $p < .01$ . As can be seen in Figure 30, there was a dramatic increase in the dropout rate if the student had dropped out of a course before. There was an additional increase when the individual had previously discontinued three or more courses.

A one-way ANOVA further validated this finding,  $F_{(2,1567)} = 735.37$ ,  $p < .01$ , and a *post hoc* test (Tukey HSD) concluded that students who had never dropped out of a course before were less likely to do so ( $p < .01$ ). Moreover, students who had dropped out of three or more courses in the past were more likely to drop out than those who had dropped out of one or two courses ( $p < .01$ ). These findings were replicated when the courses under investigation were analyzed separately.

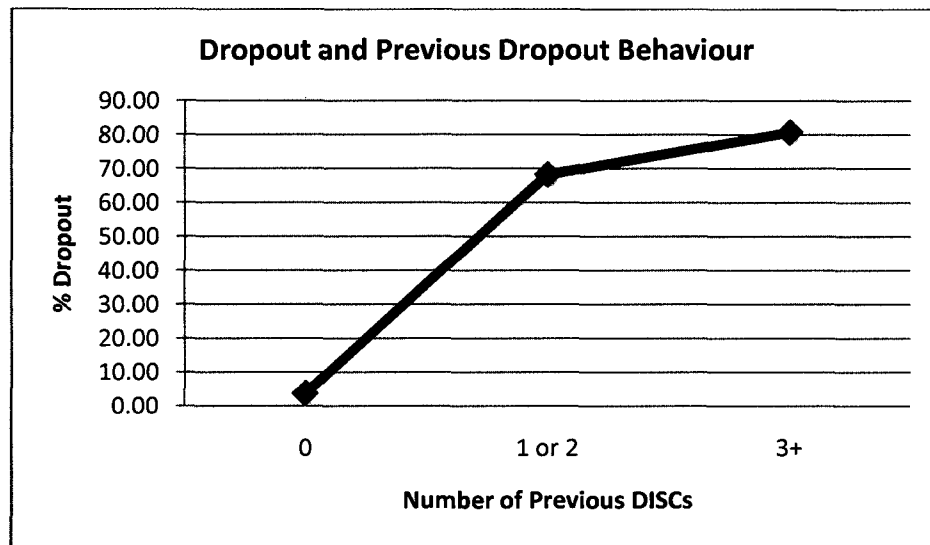


Figure 30. Dropout and Previous Dropout Behaviour

## Courses

When the dropout rates were compared between the individual courses, a one-way ANOVA concluded that at least one of the three courses differed significantly from the others ( $F_{(2,1567)} = 38.98$ ,  $p < .01$ ). A *post hoc* analysis (Tukey HSD) identified the chemistry course as having a significantly lower dropout rate than the other two online courses under investigation ( $p < .01$ ), whereas no significant difference was found between the attrition rates of the religion and finance course ( $p = .380$ ).

As shown in Table 26, out of the 718 students who were enrolled in the chemistry course at the DNE deadline, 690 remained by the deadline for academic withdrawal. This translates into a 3.90% dropout rate. The finance course had 84 less students enrolled in it by the discontinue

deadline, yielding an attrition rate of 17.25%. The religion course had the worst retention rate of the three courses under investigation with 19.73% of its students dropping out.

## **Survival Analysis**

The following section is devoted to the results of the survival analysis of the students enrolled in the three targeted courses: CHEM 208, FINA 200, and RELI 216. It will begin with a report of the overall results of the retention of students enrolled in the three courses with the construction of a life table, and by plotting the survival and hazard functions. This will be followed by the investigation of the effects of each covariate on retention patterns using survival analysis techniques, including the Kaplan-Meier product limit estimator, before investigating retention patterns within each individual course.

### ***Overall Results***

The results of the overall survival analysis for the three courses under investigation, as displayed by the survival function (Figure 31) and the hazard function (Figure 32), showed that the majority of the students drop out of their online course in the final three weeks leading to the academic withdrawal deadline (weeks eight to ten). More precisely, after reaching a low during week five<sup>13</sup> ( $p_5 = .006$ ) the hazard rate begins a measured climb as of week six ( $p_6 = .008$ ), and accelerates over the next two weeks until reaching its zenith during weeks eight and nine at 2.6%. The hazard rate dips slightly, but remains high at 2.3% in the final week to discontinue a course. This means that a student who was still enrolled in their online course at the beginning of week seven had roughly a 6.4% probability of dropping out by the DISC deadline. The three courses under investigation were combined to produce a global life table (Table 27).

The cumulative proportion of students retained begins dropping as of week three (after the DNE deadline at the end of week two), and does so steadily for a period of about five weeks. It is in the seventh week that the slope decreases more radically until the deadline for academic

---

<sup>13</sup>  $p_x$  refers to the probability of dropping out during week “x”, the hazard rate during that time period. This is different than “p”, which is the p-value of a statistical test.



withdrawal when it reaches its lowest point at .885, or 88.5% student retention. The hazard function, on the other hand, is negatively-skewed. This confirms that the majority of students chose to drop the online course later rather than earlier. In fact, the hazard rate experienced a 77% increase from week six to week seven ( $p_6 = .008$  to  $p_7 = .014$ ) before reaching its highest point during weeks eight and nine (2.6%).

*Table 27. Life Table*

Week	# Entering Interval	# DISC	Cum Prop Retained	Hazard Rate
2a	1570	0	1.000	.000
3	1570	15	.990	.010
4	1555	13	.982	.008
5	1542	9	.976	.006
6	1533	12	.969	.008
7	1521	21	.955	.014
8	1500	38	.931	.026
9	1462	38	.907	.026
10b	1424	34	.885	.023

*a. DNE deadline at the end of week two, b. DISC deadline at the end of week ten*

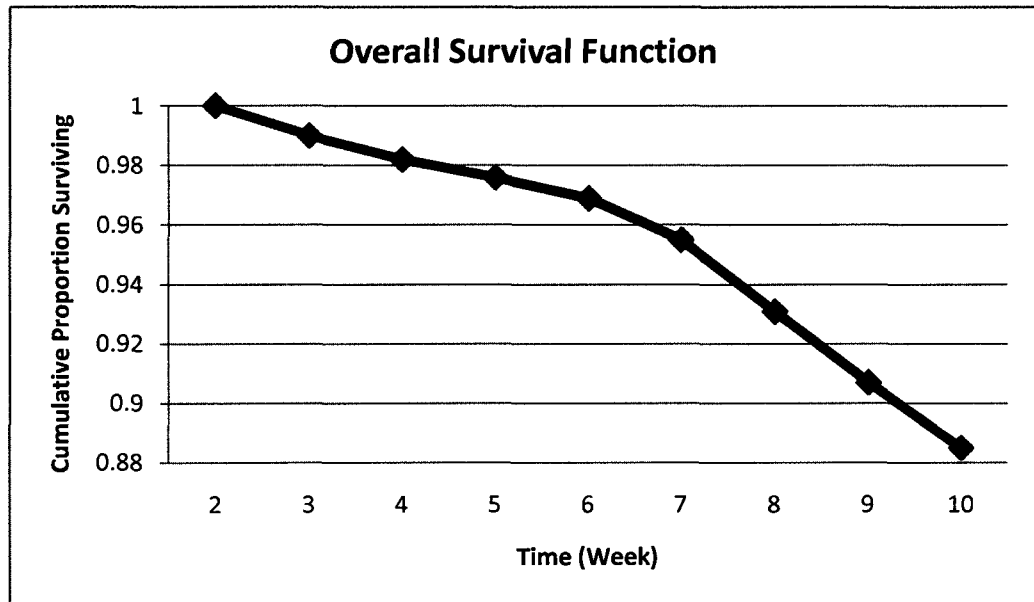


Figure 31. Overall Survival Function

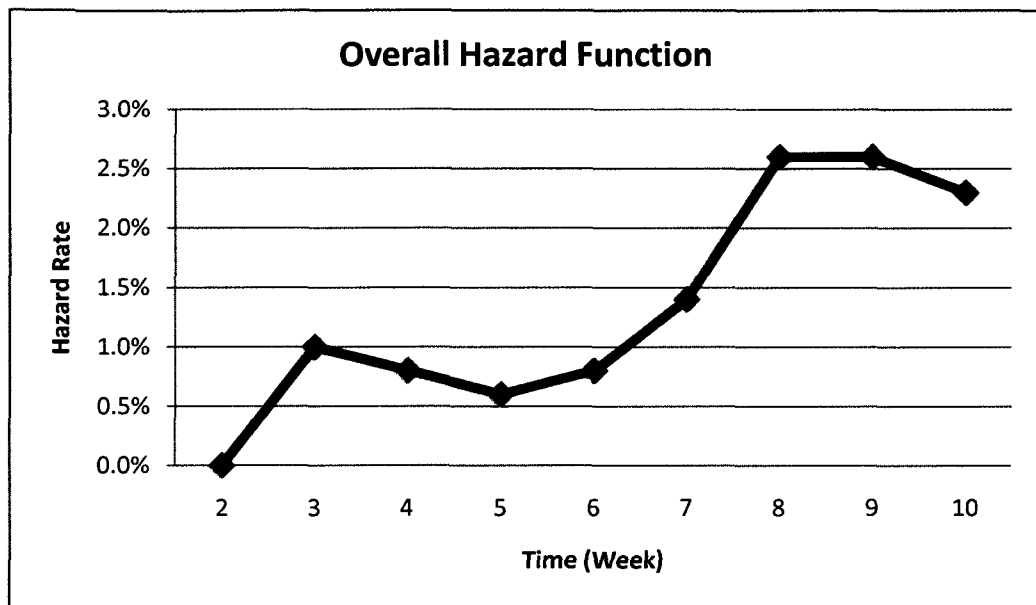


Figure 32. Overall Hazard Function

### ***Univariate Analyses***

The following section will focus on the univariate survival analysis of the major covariates using the Kaplan-Meier product limit estimator. In each of these cases, the Log-Rank test (also known as Mendel-Cox) was used to test for statistically significant differences between the retention patterns at each level of the independent variable, and the Wilcoxon Test served to identify variations in an overall comparison. The survival analysis was first carried out on all three courses to indentify general behaviours before focusing on the students enrolled in the individual courses.

#### **Variable: Gender**

The Kaplan-Meier product limit estimator, using gender as the covariate, produced survival and hazard functions that were not only very similar to each other, but also to the overall pattern (Figure 33). The overall comparison of the two functions did not prove to be statistically significant,  $\chi^2_{(1, N=1570)} = 0.19$ ,  $p = .890$ , although there was a slight discrepancy at the end of the data collection period with women achieving the highest hazard rate recorded among the genders during week 9 ( $p_9 = .033$ ). This was 14% more than that of men during that same week.

On the other hand, men reached their peak hazard rate the following week ( $p_{10} = .029$ ), as summarized in Table 28.

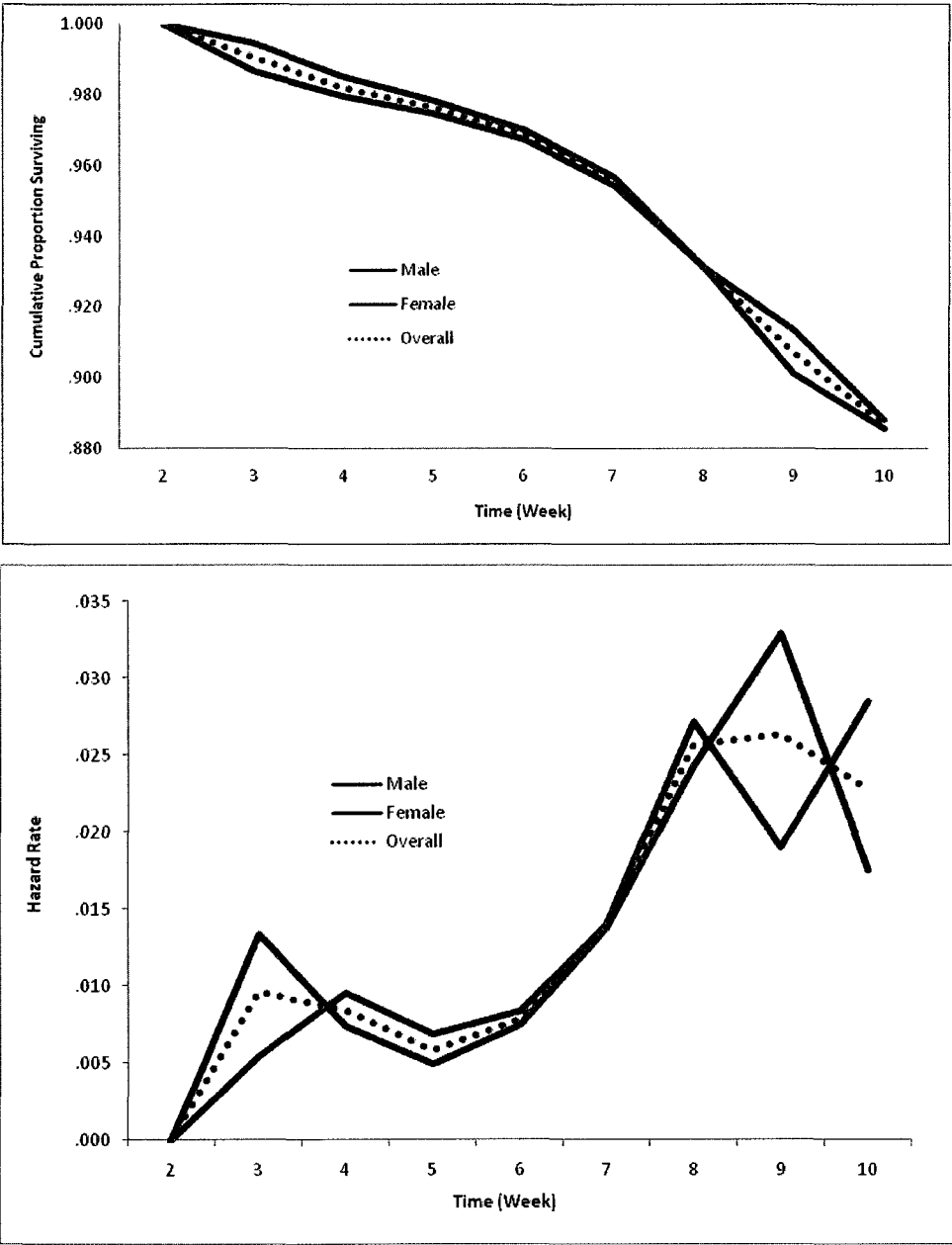


Figure 33. Survivor and Hazard Functions for Gender

Table 28. Summary of Survival Analysis for Gender

Gender	N	# DISC	Prop. Survived	Max Hazard	Week
Female	830	96	.884	.033	9
Male	740	84	.886	.029	10

No statistically significant differences were found among the retention patterns of males and females when the courses were investigated separately. The discrepancies that were identified in the overall pattern between men and women were likely caused by the fact that there was an increase in the chances of attrition among females enrolled in the finance course during week nine (from  $p_8 = .020$  to  $p_9 = .074$ ), and in week eight for the religion course ( $p_7 = .022$  to  $p_8 = .058$ ). For males enrolled in the religion course, their hazard rate increased threefold in week eight ( $p_8 = .093$ ) and reached 7.3% in week ten.

Although the gender differences in overall retention of the students in the courses were not statistically significant, it is noteworthy that retention in the chemistry course was nearly equivalent (females: 96.5%, males: 96.0%), that males had slightly higher retention rates in the finance course (females: 82.7%, males: 83.5%), and that women did not drop out as much as men in the religion course (females: 81.4%, males: 78.8%).

### Variable: Student Status

In the case of students who were enrolled full-time, compared to individuals taking less than four courses a semester, a significant difference was found in their survival and hazard functions using the Wilcoxon test,  $\chi^2_{(1, N=1570)} = 30.54, p < .01$ . The survival function depicts a clear, widening gap between full-time and part-time students at the end of each week (Figure 34). In fact, by the academic withdrawal deadline, that gap showed that full-time students had been retained 9.4% more than their part-time colleagues. The difference between the two types of students is best demonstrated during week eight when the hazard rate of part-time students more than doubled to 3.9% and peaked the following week at 4.8%, whereas there were no major changes in the attrition rate of full-time students during that same time period. This meant that for all part-time students enrolled in their online course at the beginning of the eighth week, there was roughly an 11% chance that they would drop out by the deadline. For full-time students, the rise

in the hazard rate was much steadier, and it began in week six ( $p_6 = .006$ ) until cresting in the tenth week at 1.7% (Table 29).

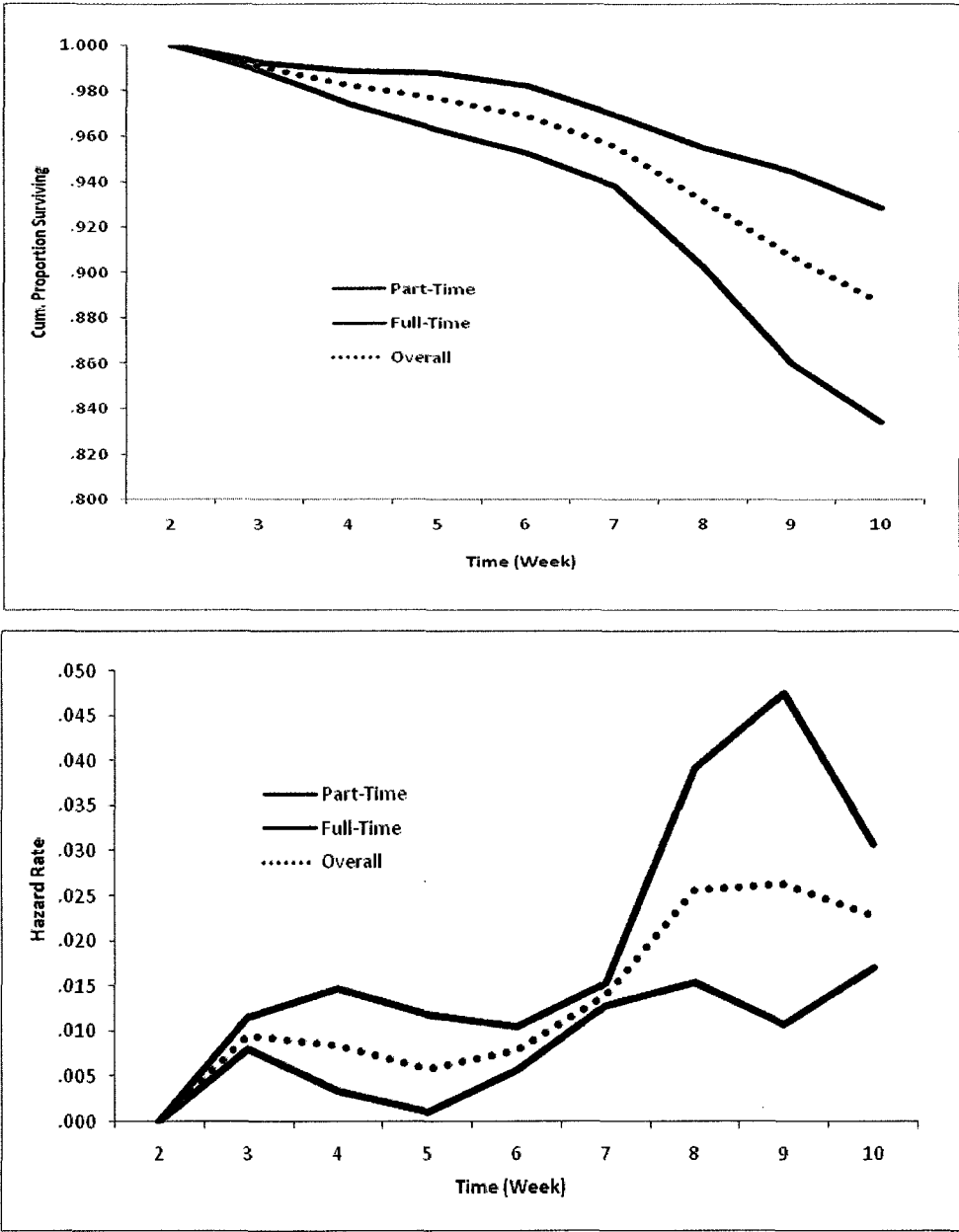


Figure 34. Survival and Hazard Functions for Student Status

Table 29. Summary of Survival Analysis for Student Status

Status	N	# DISC	Prop. Survived	Max Hazard	Week
Part-Time	693	116	.833	.048	9
Full-Time	877	64	.927	.017	10

Although previous statistical analyses had not identified direct differences in the retention rates of students based on gender, there had been discrepancies found among males and females when controlled for their student status. However, despite the different rates among these students, survival analysis techniques were unable to uncover significant variations among their retention patterns using the Log Rank test,  $\chi^2_{(1,N=1570)} = 0.36, p = .551$ . In other words, there was no difference in the survival rates of the part-time males and females ( $\chi^2_{(1,N=693)} = 2.33, p = .127$ ), nor between full-time males and females ( $\chi^2_{(1,N=877)} = 1.05, p = .304$ ).

However, the Wilcoxon test did confirm the existence of a main effect between full-time and part-time students among female ( $\chi^2_{(1,N=803)} = 28.10, p < .01$ ), and male students ( $\chi^2_{(1,N=740)} = 6.33, p = .012$ ). As seen in Figure 35, after initially abiding by the overall average, females studying part-time experienced a sudden increase in their hazard rate. It more than triples during week eight ( $p_8 = .046$ ). This trend continued the following week where the highest hazard rate among all groups was attained (6.9%), before dropping during the final week ( $p_{10} = .033$ ). Part-time female students who were still enrolled in their online course at the end of the seventh week had an 86.3% chance of surviving until the course drop deadline. Their overall retention rate was the lowest among all groups at 80.8%. In contrast, females studying full-time never exceeded a hazard rate of 1.5%, which was achieved during the seventh week of the semester. Their overall retention rate was 93.5%, which was the highest among all groups, as exhibited in Table 30.

For males studying part-time, the retention pattern followed that of their female counter-parts, but the increase in their hazard rate during the eighth week was trivial in comparison. Nonetheless, the eighth week of the semester coincided with their peak hazard rate ( $p_8 = .033$ ), which remained relatively stable until the DISC deadline two weeks later. Of the males studying part-time who were still enrolled in their online course at the beginning of week eight, 91.4% would be retained by the deadline to drop out. Their overall retention rate was almost 4.7% better than part-time female students (85.5%). On the other hand, males who were studying full-time had a slightly lower retention rate than full-time females at 91.6%, a difference of 1.9%. However, after being more or less bereft of any dropouts during the first half of the

semester, the hazard rate began a leisurely ascent as of the sixth week of the semester. The hazard rate remained below the overall average until the DISC deadline when it suddenly increased to 2.8%.

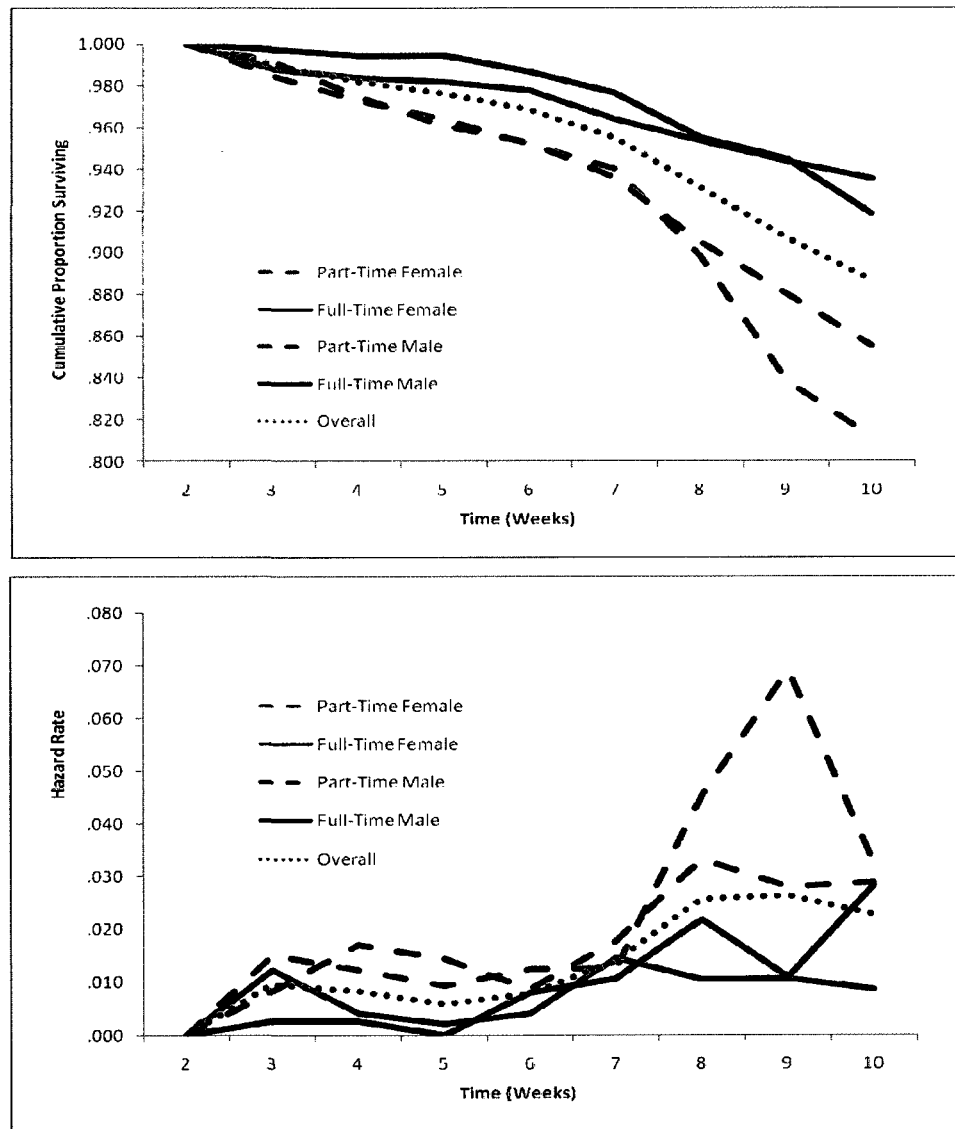


Figure 35. Survival and Hazard Functions for Student Status and Gender

Table 30. Summary of Survival Analysis for Student Status and Gender

Variable	N	# DISC	Prop. Surviving	Max Hazard	Week
<i>Full-Time Students</i>					
Female	496	32	.935	.015	7
Male	391	32	.916	.028	10
<i>Part-Time Students</i>					
Female	334	64	.808	.069	9
Male	359	52	.855	.033	8

Since it was already established that part-time students had a higher dropout rate than full-time students in previous analyses, the focus of this analysis was on the identification of differences in the registration patterns of the covariate within each course. The Log Rank test showed that there was a difference in the retention patterns between full-time and part-time students for students enrolled in the religion ( $\chi^2_{(1,N=365)} = 9.66, p < .01$ ) and finance courses ( $\chi^2_{(1,N=487)} = 13.58, p < .01$ ), but not in chemistry ( $\chi^2_{(1,N=718)} = 1.55, p = .212$ ).

After going through the first half of the semester without many noticeable differences between the courses, the hazard rate of full-time students in the religion course tripled between week six and week eight to  $p_8 = .032$ . It then dropped the following week before reaching its peak in week ten with a hazard rate of 4.5%. For students enrolled in the finance course, the hazard rate of full-time students steadily increased as of week six before reaching its peak in week nine ( $p_9 = .036$ ) before tapering off. Students taking a full course load did not experience significant differences in their retention patterns in the chemistry course.

Among part-time students, the hazard function (Figure 36) displayed similar rates among all courses until week eight when the probability of dropping the religion course jumped by over 600% (from  $p_7 = .019$  to  $p_8 = .118$ ) before slowly decreasing over the remaining three weeks to the DISC deadline (but remaining high). For the finance course, part-time students saw their hazard rate more than double in the ninth week of the semester (from  $p_8 = .023$  to  $p_9 = .076$ ). The hazard rate remained high the following week, until the DISC deadline. There was no significant pattern in attrition among part-time students enrolled in the chemistry course (Table 31).



Among the students enrolled in the chemistry course, the highest hazard rates were experienced by part-time female students, especially in week eight ( $p_8 = .017$ ) and in week nine, when the peak value was witnessed ( $p_9 = .026$ ). This difference was found to be statistically significant among females ( $\chi^2_{(1,N=396)} = 3.90, p = .048$ ), but not among males in the chemistry course ( $\chi^2_{(1,N=349)} = 0.02, p = .882$ ).

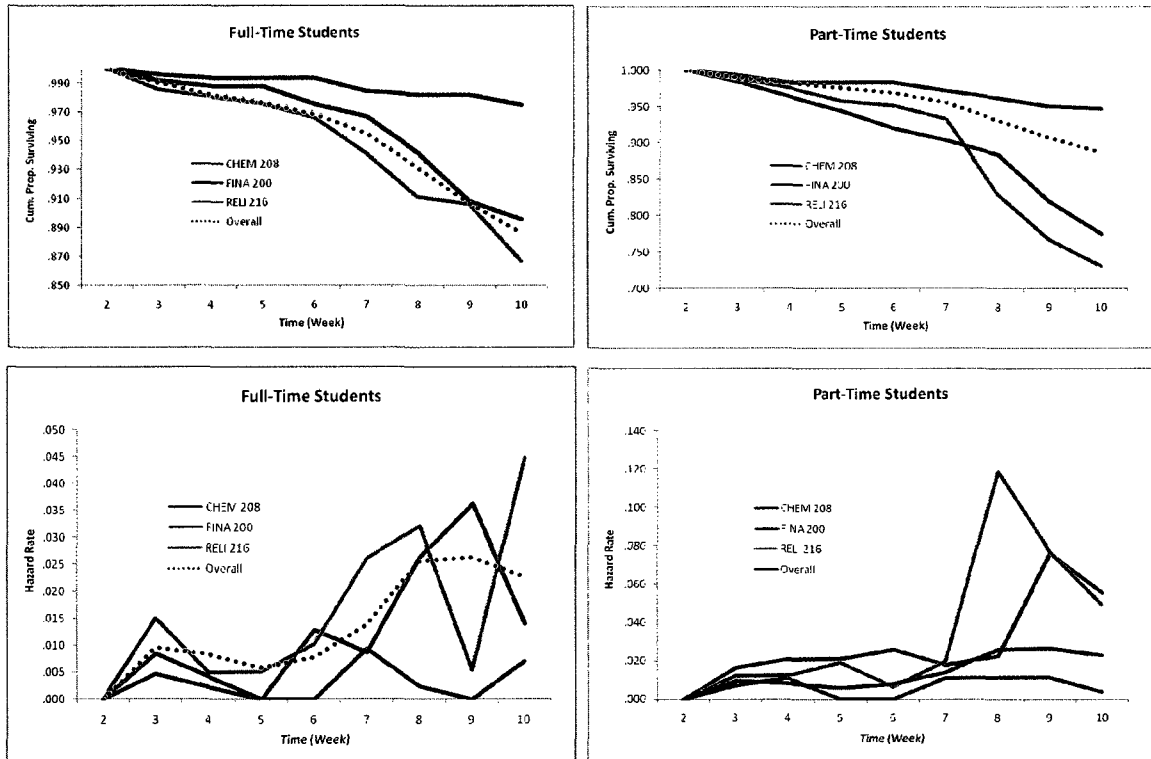


Figure 36. Hazard Function and Data table for Student Status by Course

Table 31. Summary of Survival Analysis for Student Status by Course

Variable	N	# DISC	Prop. Surviving	Max Hazard	Week
<i>Full-Time Students</i>					
CHEM 208	436	12	.972	.009	7
FINA 200	239	25	.895	.036	9
RELI 216	202	27	.866	.045	10
<i>Part-Time Students</i>					
CHEM 208	282	15	.947	.011	9
FINA 200	248	57	.770	.076	9
RELI 216	163	44	.730	.118	8

Females studying part-time also had the highest hazard rate in the finance course with 9.8% in week nine, followed by 5.9% during the tenth week. Meanwhile, full-time female students, who had the highest retention rate among all groups at 89.7%, were also exposed to their greatest risk of dropout in week nine ( $p_9 = .051$ ). Females studying part-time had the lowest retention rate among these groups in the course (75.7%), and had a 17.3% chance of dropping out of the course if they were still enrolled at the beginning of week eight (6.8% for full-time females).

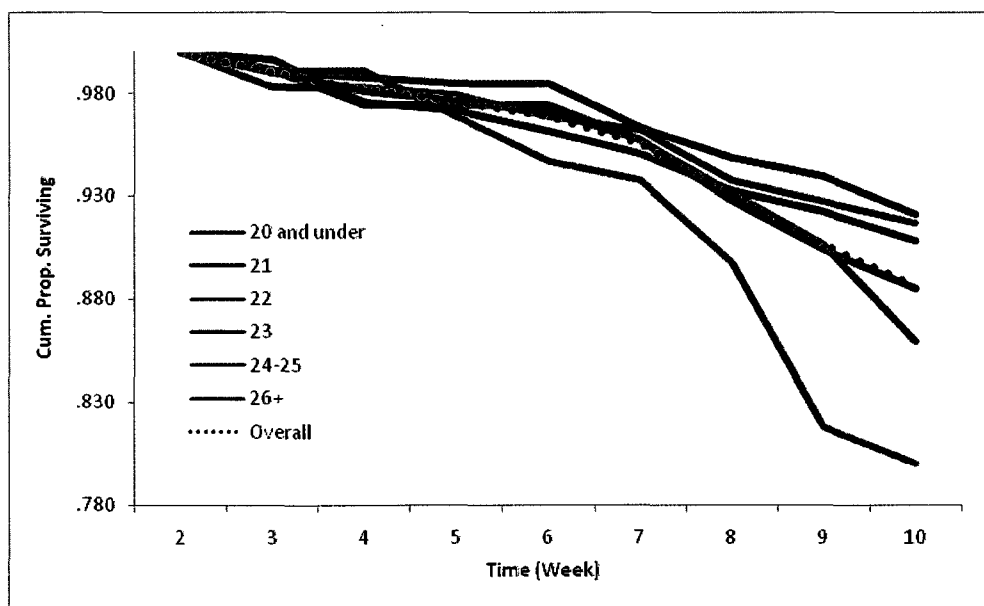
On the other hand, males studying part-time experienced a hazard rate high of 5.9% in week nine, and 5.3% in the following week in FINA 200. Their retention rate was 11.4% lower than males studying full-time (full-time males: 89.4%, part-time males: 78.0%). For their part, full-time males did not exceed a hazard rate of 3.2% (achieved during week eight) throughout the semester. A part-time male who entered their eighth week of the finance course had a 12.7% probability of discontinuing the course, whereas the chance of this happening for a male studying full-time was 7.8%. The difference in the retention patterns between part-time and full-time female students ( $\chi^2_{(1,N=214)} = 6.76, p < .01$ ), as well as amongst men ( $\chi^2_{(1,N=273)} = 6.73, p < .01$ ) were found to be statistically significant.

For students enrolled in the religion course, a significant difference was found between the retention patterns of the female students based on their full or part-time status,  $\chi^2_{(1,N=247)} = 13.58, p < .01$ , but not among the males,  $\chi^2_{(1,N=118)} = 1.07, p = .301$ . In particular, women studying part-time were exposed to a sudden hazard rate high of 10.8% in week 8, followed by 9.5% in week nine. Full-time females enrolled in the religion course did not have a hazard rate that exceeded 2.4% during the semester (week 10) and their retention rate was 88.7% compared to 71.7% for part-time female students. Of the part-time female students who were enrolled in the religion course at the beginning of week eight, there was a 22% chance that a given student would drop out by the tenth week. This value was 4.6% for full-time female students during the same time period.

Despite the fact that their retention pattern was not found to be different from full-time students, part-time males enrolled in the religion course experienced the highest hazard rate among all groups in week eight at 13.9%. The most popular option among male students enrolled full-time was to wait until the final week to drop out of RELI 216 ( $p_{10} = .095$ ). The retention rate of full-time male students in the religion course was 82.0%, which was better than the part-time students at 75.4%.

### Variable: Age Group

The retention patterns of the six age groups proved to be significantly different according to the results of the Wilcoxon test,  $\chi^2_{(5, N=1570)} = 23.57$ ,  $p < .01$ . A pairwise comparison showed that, much like the results of the previous analysis of the registration data, the older age groups tended to drop out at a higher rate than the younger ones (Figure 37). More precisely, individuals in the 26 and over age group experienced a sudden climb in their hazard rate during week eight ( $p_8 = .044$ ) and it crested in week nine at 9.3%, which was a significantly greater hazard rate than all others groups ( $p < .05$ ) with the exception of the 24-25 age group ( $p = .064$ ). Students in the second-oldest age group proved to have a significantly higher hazard rate than individuals in the youngest age group ( $p = .039$ ), peaking in week ten with a hazard rate of  $p_{10} = .053$  (Table 32).



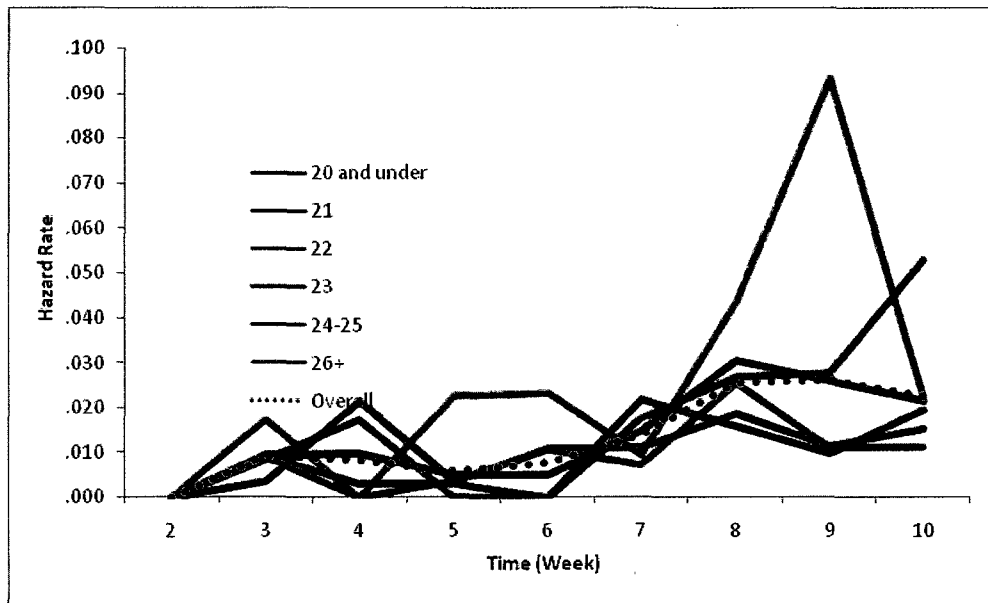


Figure 37. Survival and Hazard Functions for Age Groups

Table 32. Summary of Survival Analysis for Age Groups

Age Group	N	# DISC	Prop. Survived	Max Hazard	Week
20 and under	329	27	.918	.022	7
21	283	26	.908	.022	4
22	289	24	.917	.026	8
23	209	24	.885	.030	8
24-25	235	33	.860	.053	10
26+	235	46	.796	.093	9

Regarding the individual courses, the main effect was caused by the spike in dropouts of students in the “26 and over” age group starting in week eight as well as with the sudden rise in the “24-25” age group in the final week. Of the students enrolled in the finance course, 11% in the eldest age group and 8% aged 24-25 dropped out of the finance course in week nine. In RELI 216, the oldest students experienced 14% attrition in week eight, and another 11% during week nine. In addition, individuals in the 24-25 age group experienced a hazard rate of 15% in week ten.

## Variable: Faculty

The univariate survival analysis concluded that a statistically significant difference existed among the students when comparing the faculties in which they were enrolled using the Wilcoxon test,  $\chi^2_{(4,N=1570)} = 24.13$ ,  $p < .01$ . A pairwise comparison identified students from the faculty of Fine Arts, as well as students who did not belong to a faculty (independents), as having a different enrolment pattern than students from Arts and Science and the JMSB ( $p < .01$ ). In addition, students who were enrolled in the JMSB had a significantly higher retention rate than those in Arts and Science ( $p < .01$ ). Students in Arts and Science represented the majority of individuals in this analysis, and consequently, demonstrated survival and hazard functions that were more or less parallel with the overall rates (Figure 38).

The hazard function for students in Fine Arts, peaked during week eight ( $p_8 = .187$ ) and demonstrated the lowest survival rate among the faculties at 70.5% (Table 33). Independent students did not fare much better with a retention rate of 75.8%, but their hazard rate peaked later in the semester during weeks nine ( $p_9 = .072$ ) and ten ( $p_{10} = .065$ ).

Within the microcosm of the individual course, it was found that students from the faculty of Fine Arts and independent students had different retention patterns than everyone else enrolled in the finance ( $\chi^2_{(4,N=485)} = 10.02$ ,  $p = .04$ ) and religion ( $\chi^2_{(4,N=365)} = 816.5$ ,  $p < .01$ ) courses, but not in the chemistry course ( $\chi^2_{(4,N=718)} = 5.24$ ,  $p = .264$ ).

When looking at the individual courses for explanations of some of these observations, one noticed that of the independent students enrolled in Personal Finance, 7% of them dropped out in week nine, and another 10% withdrew in week ten. For students in Fine Arts who were in the same course, 19% of them voluntarily withdrew during week eight, with another 7% dropped out the following week.

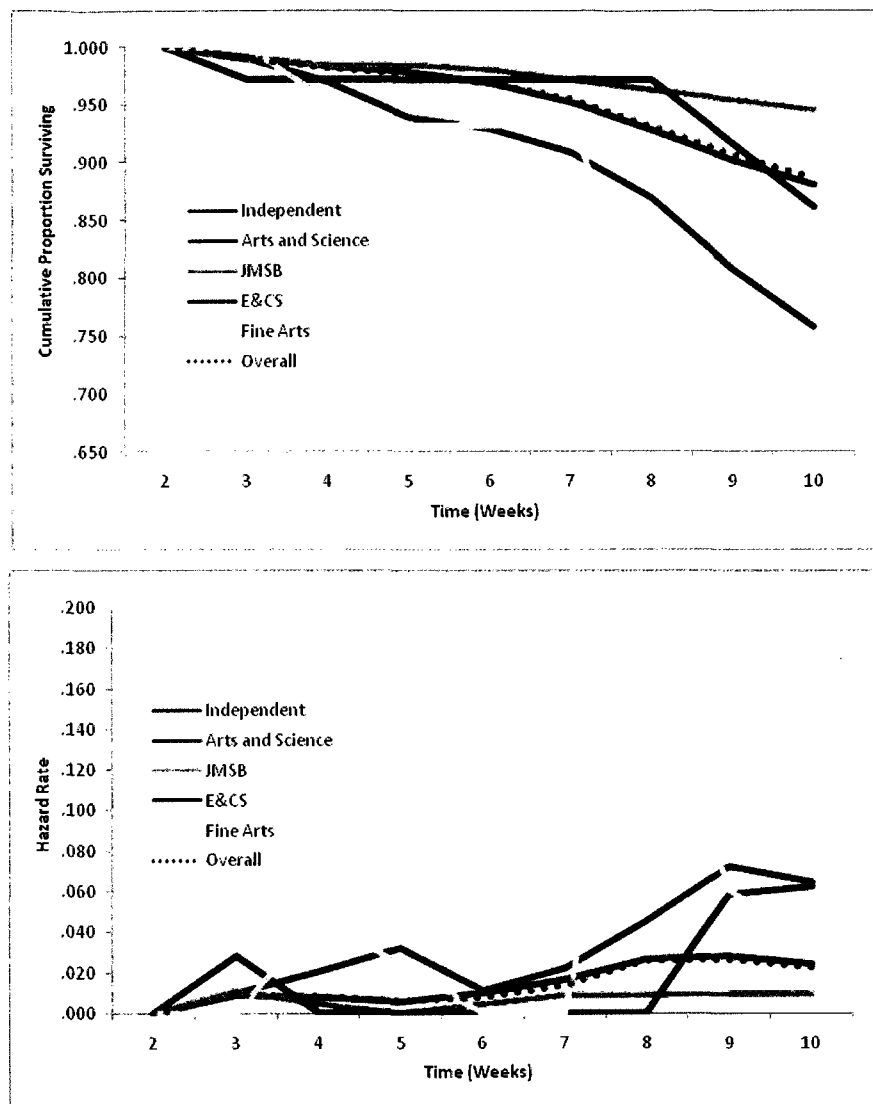


Figure 38. Survival and Hazard Functions for Faculty

Table 33. Summary of Survival Analysis for Faculty

Faculty	N	# DISC	Prop. Surviving	Max Hazard	Week
Independent	99	24	.758	.072	9
Arts and Science	933	112	.880	.028	9
JMSB	458	26	.943	.009	10
E&CS	36	5	.861	.063	10
Fine Arts	44	13	.705	.187	8

For the religion course, week eight saw 22% of its independent students drop out, followed by another 18% the following week. This means that of the independent students who entered the eighth week of class, 40% did not survive past the DISC deadline. In the same way, 32% of the students from the faculty of Fine Arts who were still enrolled in the course at the beginning of the eighth week dropped out by the end of it. In fact, the survival rate of independent students still enrolled in the religion course at the start of week eight was 54.5%.

Mind you, the sudden increases in the hazard rates of Fine Arts and Engineering and Computer Science students could be skewed somewhat by the relatively small sample sizes, especially when divided up by individual courses. But although this could be a factor in the high hazard rates experienced by students in Fine Arts, the fact remains that half of them dropped out of the religion course by the end of the semester, and 72% survived the finance course. The retention rates of independent students in the same two courses were very similar as well.

### **Variable: Type of Programme**

Although the majority of students were admitted to the “regular” 90-credit programme, the retention patterns of the three possible streams proved to be significantly different using the Wilcoxon test,  $\chi^2_{(2, N=1570)} = 8.75, p = .013$ . Students who were admitted to Concordia as a mature student had a significantly different survival pattern than students in the regular programme ( $p = .026$ ), as well as those in the extended programme ( $p < .01$ ). For mature students, the significant difference originated during week nine, when their hazard rate almost doubled to its highest level ( $p_9 = .067$ ). It remained well above the other program students during the following week before the DISC deadline ( $p_{10} = .053$ ). Although students in the extended programme had a higher retention rate than all others (92.1%), their pattern was not significantly different than those in the regular programme ( $p = .117$ ).

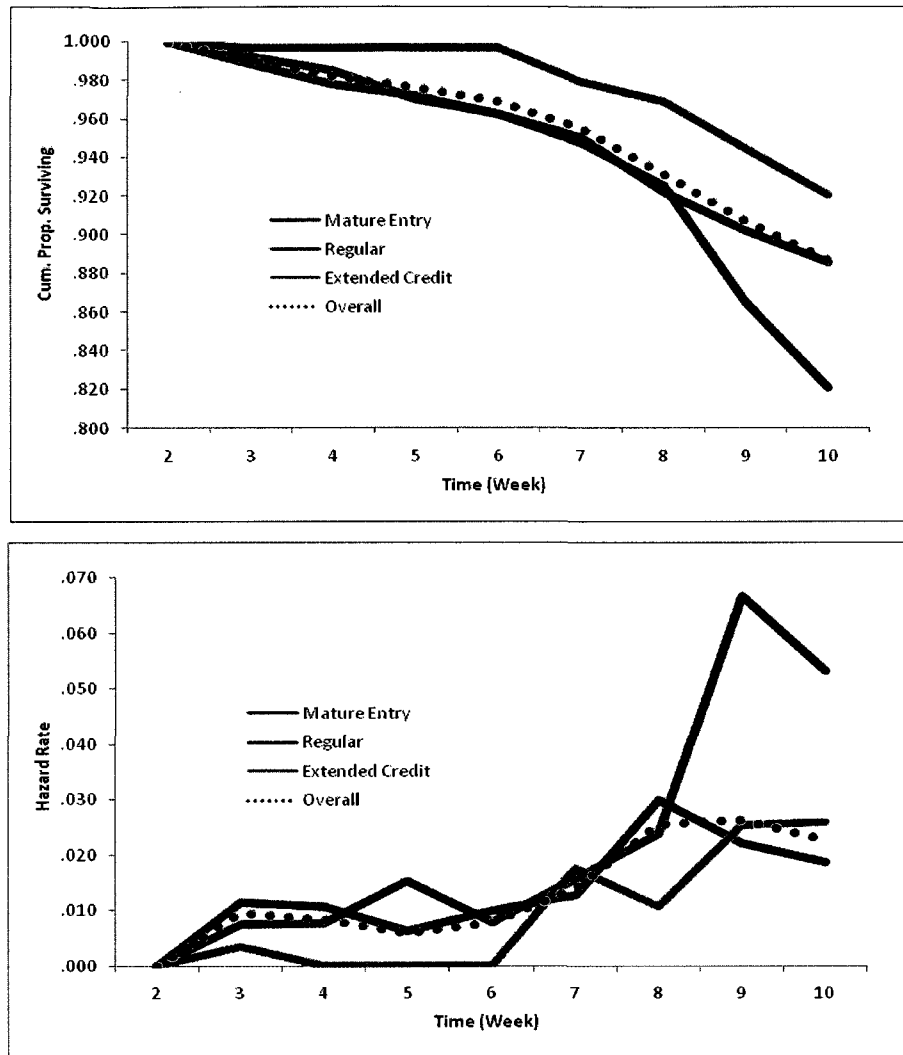


Figure 39. Survival and Hazard Functions for Type of Programme

Table 34. Summary of Survival Analysis for Type of Programme

Program	N	# DISC	Prop. Surviving	Max Hazard	Week
Mature Entry	134	25	.813	.067	9
Regular	1146	132	.885	.030	8
Extended Credit	290	23	.921	.026	10

It has already been established that students enrolled at the university as mature students have a higher dropout rate than those in regular and extended credit programmes. Survival analysis has also been able to confirm that the retention patterns of the three programmes diverge during week nine when the hazard rate of the mature students soared to 6.7%, before dropping



slightly to 5.3% during the following week. These values represented at least double the rates of the other programme students during that same time period.

Although no significant differences were found among the retention patterns of the various programme students when the courses were investigated separately, this exercise did prove useful in identifying the source and timing of the dropouts. Amid students in the finance course, it was during week nine that the highest hazard rates were experienced by all three groups, led by mature students at 8.7%. Although the rates the following week dropped, they still remained relatively high.

For students enrolled in the religion course, the hazard rates start climbing as of week 8 for all programmes, but the rise was much more evident with mature students who experienced a high of 12.5% during the week ten. In fact, of the mature students who were still enrolled in the course at the beginning of week eight, about one-quarter would drop out by the DISC deadline (23.1%). Week eight represented the highest hazard rate among regular programme students (8%), and week ten was the most popular time to drop out among those in the extended credit programme (10.8%).

### **Variable: Programme Preference**

Although individuals who were not enrolled in their first or second choice of program seemed to be more likely to drop out, no significant differences were found in the pattern of this behaviour among the three groups,  $\chi^2_{(2, N=1561)} = 4.08, p = .126$ . Students who were enrolled in their first choice of program made up the lion's share of the analysis and their retention pattern seemed to mimic the overall negatively-skewed distribution with a slightly higher retention rate of 89.4% and a maximum hazard rate occurring in week nine of 2.9% (Figure 40). Students enrolled in their second choice had a cumulative survival proportion of 87.8%, and a hazard rate high of 2.7% achieved in weeks nine and ten. The individuals who were accepted to Concordia University into a program that was not in their top two choices had an overall retention of 85% with a maximum hazard rate of 3.8% in week ten. It was also of interest to note that hazard rate

peaks achieved in weeks four and eight ( $p_4 = .023$  and of  $p_8 = .031$ ) gave the hazard function a seemingly tri-modal distribution (Table 35).

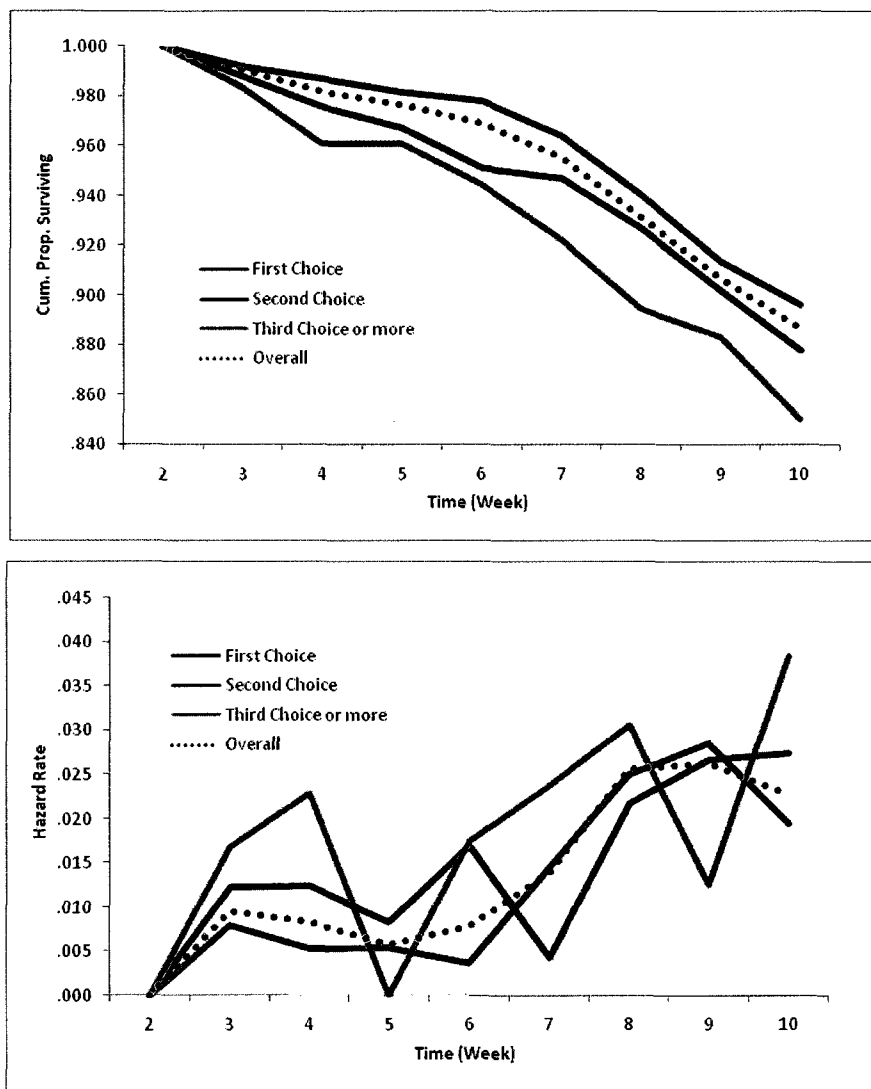


Figure 40. Survival and Hazard Functions for Programme Preference

Table 35. Summary of Survival Analysis for Programme Preference

Choice	N	# DISC	Prop. Survived	Max Hazard	Week
First	1135	120	.894	.029	9
Second	246	30	.878	.027	10
Third +	180	27	.850	.038	10

A student's programme preference did not prove to be significant in the overall survival analysis, and this trend was validated when the courses were investigated individually,  $\chi^2_{(2,N=1561)} = 5.17$ ,  $p = .075$ . Despite the fact that the hazard rate was higher for students who were admitted to their third choice of programme or lower, especially in the religion and finance courses, the patterns were not found to be statistically different.

However, when the survival analysis of this data was carried out while controlling for student status, no main effect was uncovered among part-time students,  $\chi^2_{(2,N=497)} = 0.68$ ,  $p = .710$ , but a statistically significant difference was found among the retention patterns of the students enrolled in full-time studies,  $\chi^2_{(2,N=877)} = 18.30$ ,  $p < .01$ . The pairwise comparisons using the Log Rank test concluded that full-time students enrolled in their preferred choice of programme had different retention patterns than any other students ( $p < .05$ ), and they enjoyed the highest retention rate.

For full-time students who were in their first-choice of programme, about 95% of them were retained by the end of the dropout period (5.2% attrition), which was better than the 9.9% attrition among students in their second choice of programme. However, the retention rate of students in their third choice of programme or more was 84.3% (15.7% attrition). The hazard rate among this last group of students reached a high of 5.3% in the last week before the DISC deadline, fuelled by developments in the finance ( $p_{10} = .095$ ) and religion courses ( $p_{10} = .133$ ). The increases in the overall hazard rates of students who were not enrolled in their top two choices during weeks seven and eight was the combined result of full-time and part-time students enrolled in the finance and religion courses.

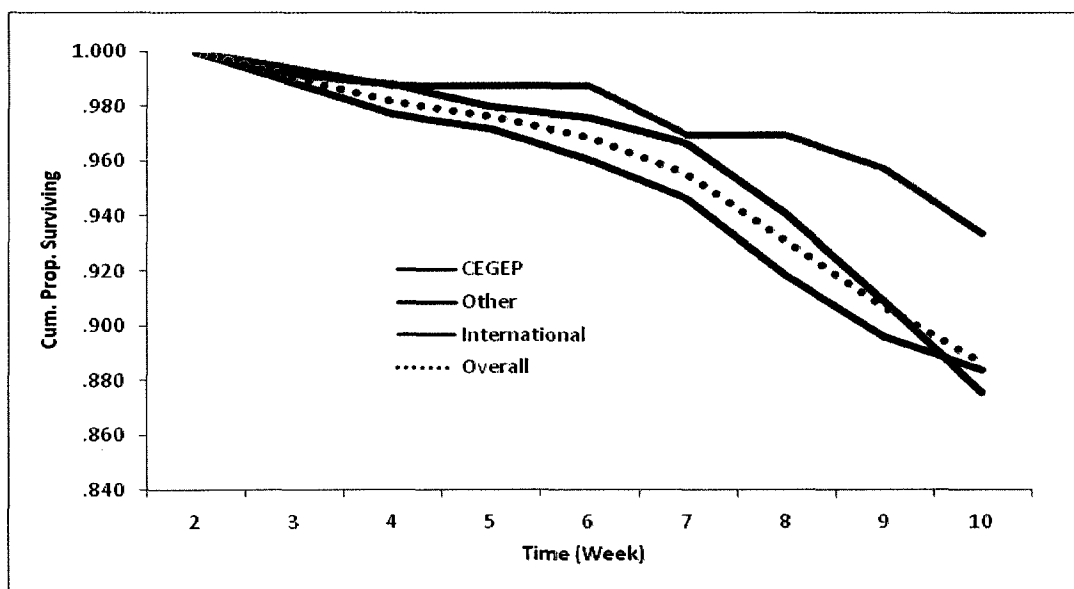
### **Variable: Source**

The source of students coming to Concordia were separated into three categories by the registration system: CEGEP, International (a school outside of Canada), and "other", which includes any scenario that does not fall in the first two possibilities (such as a school outside of the province, or from another Canadian university). According to the Kaplan-Meier product

estimator, no significant differences were found among the three groups,  $\chi^2_{(2, N=1570)} = 2.97$ ,  $p = .226$ . The students from international sources accounted for the smallest group and the highest retention rate (92.8%). It attained its highest hazard rate in week ten with  $p_{10} = .025$ . Students from the CEGEP system represented the largest group and the second-best retention rate (88.4%). Its peak hazard rate was achieved in week eight at  $p_8 = .030$ . Students from “other” sources had the lowest retention rate amongst the sources (87.4%) with a peak hazard rate of 3.8% achieved in week ten (Table 36).

Similarly, no differences were found in the retention patterns of students in the individual courses based on their source. Although students coming from international sources tended to have lower hazard rates than those from the CEGEP or other Canadian systems, particularly in the FINA and RELI, the gap was not found to be statistically significant in all courses.

Although a lower proportion of international students dropped out of their online courses than their Canadian classmates, the difference between their attrition rates was not found to be statistically significant in a previous analysis. Similarly, no significant difference was found in the retention patterns of the students based on where they came from to attend Concordia.



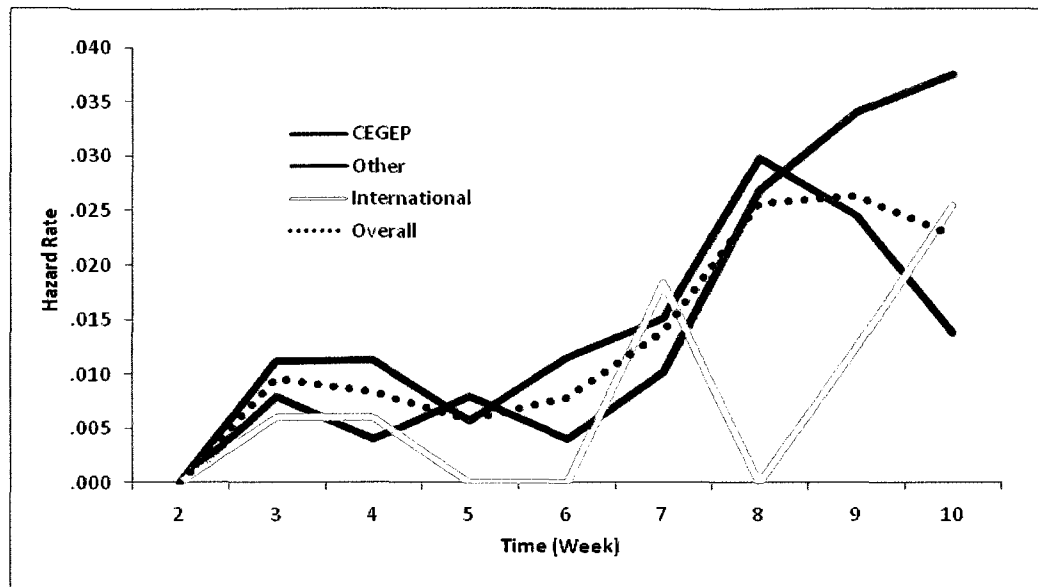


Figure 41. Survival and Hazard Functions for Source

Table 36. Summary of Survival Analysis for Source

Source	N	# DISC	Prop. Surviving	Max Hazard	Week
CEGEP	897	104	.884	.030	8
Other	507	64	.874	.038	10
International	166	12	.928	.025	10

## Variable: Immigration Status

Despite the seemingly large discrepancy between the retention and hazard functions of Canadian and international students, the Log Rank test did not prove to be statistically significant,  $\chi^2_{(1, N=1570)} = 2.78$ ,  $p = .095$ . With the majority of students enrolled in online courses being Canadian, it was no surprise that their survival rates, as displayed in Figure 42 and summarized in Table 37, mimicked the overall baseline function. Canadian students had a retention rate of 88.0%, with maximum hazard rates appearing in weeks nine and ten ( $p_9 = .029$  and  $p_{10} = .028$ ). However, international students ( $N = 166$ ) represented a higher overall retention of 92.8% with peaks in hazard rates during week seven ( $p = .018$ ) and week ten ( $p = .025$ ).

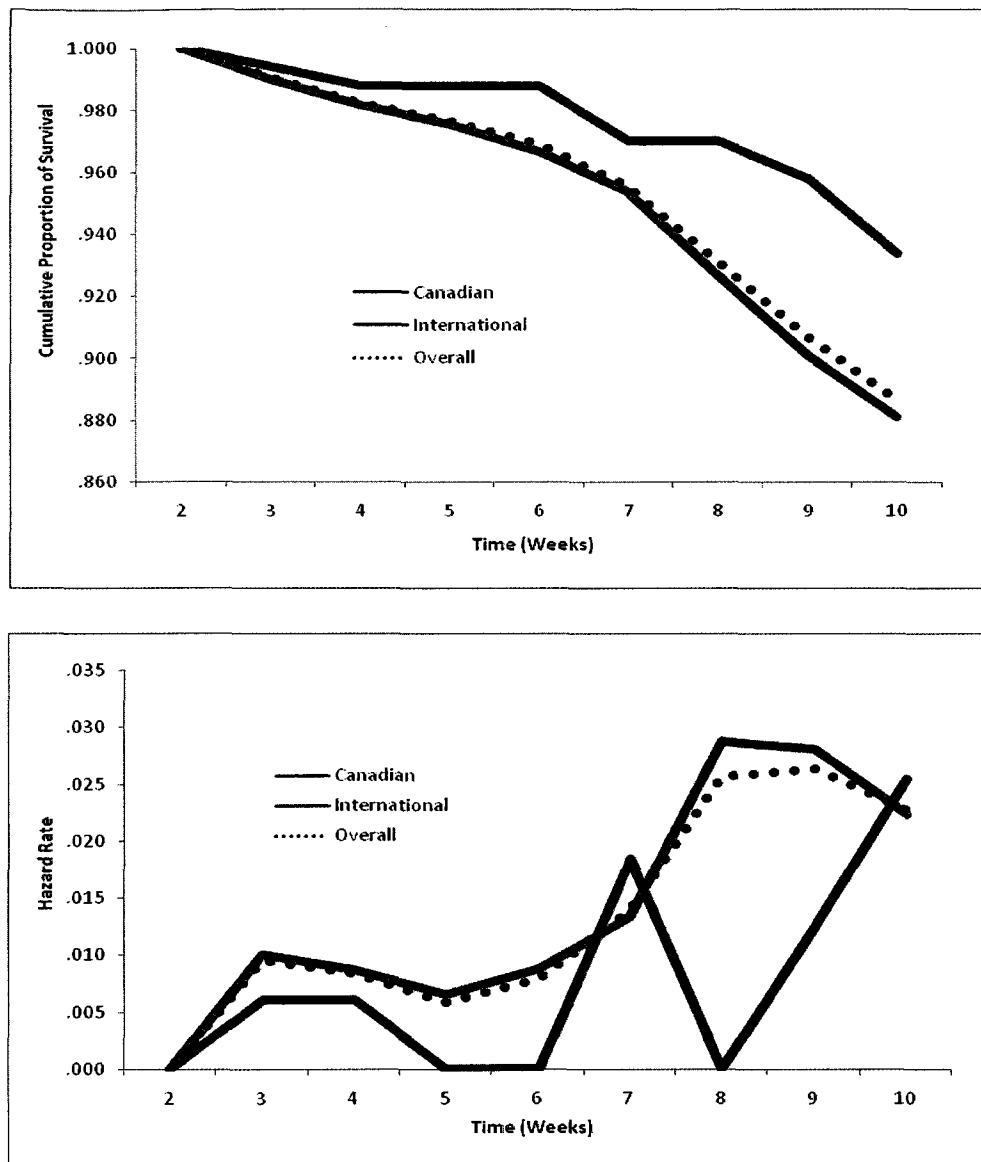


Figure 42. Survival and Hazard Functions for Immigration Status

Table 37. Summary of Survival Analysis for Immigration Status

Status	N	# DISC	Prop. Surviving	Max Hazard	Week
Canadian	1404	168	.880	.029	8
International	166	12	.928	.025	10

The diverging hazard rates between these groups of students, especially during week eight, failed to provide enough reason to cause a main effect between them.. Where Canadian students experienced their highest hazard rate of 2.9% in week eight (compared to no drop outs by international students), international students who dropped out mainly did so in the last two weeks of their course. When the courses were investigated separately, no main effect was uncovered.

### **Variable: Language**

No significant difference was found amongst the retention patterns of students who spoke English, French, or a non-official first language using the Log Rank test,  $\chi^2_{(2, N=1570)} = 0.57, p = .750$ . However, of note is the fact that the survival rate of French-speaking students (N = 147) was the lowest among the groups at 85.7%, and they experienced their highest hazard rate in week nine at 4.6% (Table 38). The patterns for the other two language groups were very similar, although their hazard rates were slightly lower than French-speaking students, as shown in Figure 43.

Just as the retention patterns of students in online courses did not seem to be affected by one's language, it was also found to be the case among the three courses. However, of note is the relatively higher hazard rates among French-speaking students enrolled in the finance course, especially during week nine ( $p_9 = .093$ ). Students who did not list English or French as their primary language also experienced a peak hazard rate during week nine ( $p_9 = .102$ ). Non-English speaking students enrolled in the religion course witnessed a dramatic increase in their hazard rates during week eight. In fact, regardless of their language of preference, all groups in that course had their highest attrition rates during that week.

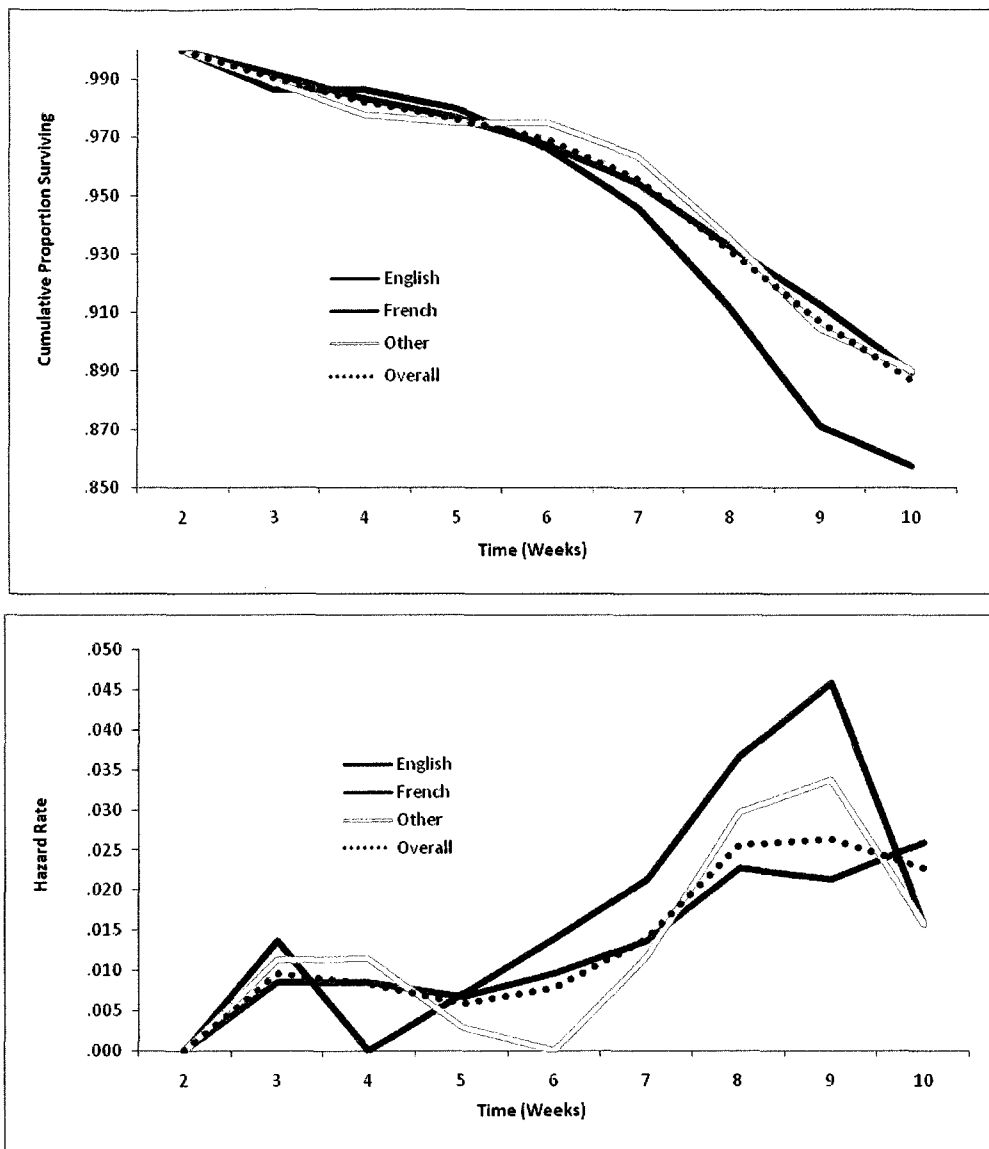


Figure 43. Survival and Hazard Functions for Language

Table 38. Summary of Survival Analysis for Language

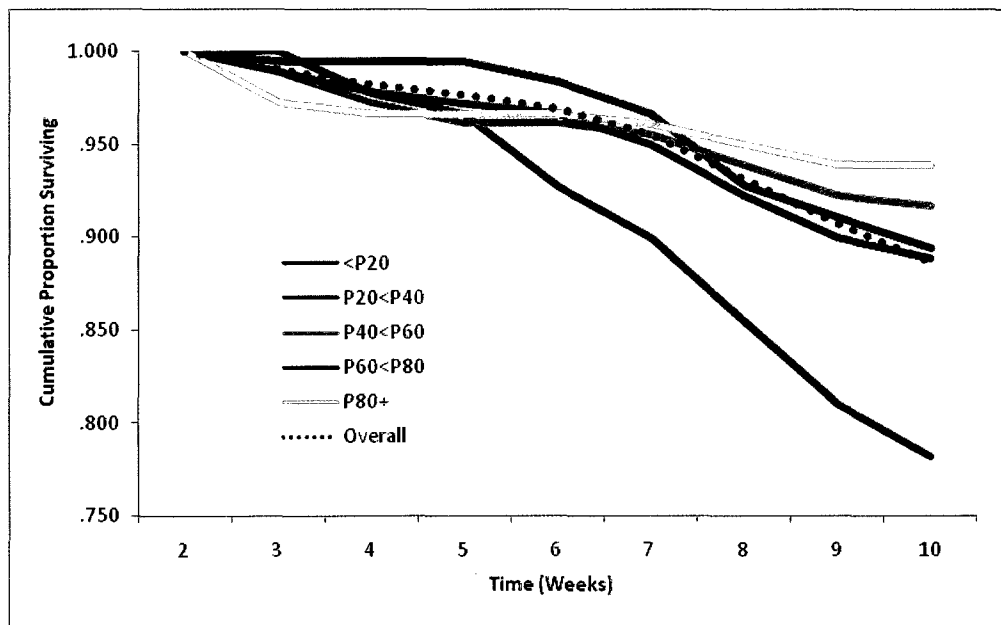
Language	N	# DISC	Prop. Surviving	Max Hazard	Week
English	1068	120	.888	.026	10
French	147	21	.857	.046	9
Other	355	39	.890	.034	9



## Variable: CRC

The survival and hazard functions for the five different CRC groups proved to be significantly different according to the Log Rank test ( $\chi^2_{(4, N=897)} = 25.46, p < .01$ ). As can be seen in the survival function (Figure 44), students in the lowest percentile group had the lowest retention rate among all groups with 78.2%. In fact, a pairwise comparison proved that the survival function for this group of students was significantly lower (and its hazard function higher) than all other groups ( $p < .01$ ). No other groups proved to have significantly different survival functions than the others, although the highest CRC quintile group had the utmost cumulative proportion of students surviving with 93.9%.

The hazard function further demonstrated the uniqueness of the lowest quintile group as it peaked during weeks four ( $p_4 = .023$ ), six ( $p_6 = .041$ ), as well as during the latter stages of the semester with the highest hazard rate in week nine ( $p_9 = .054$ ). In contrast, the students in the highest percentile group peaked in hazard rates very early in week three with  $p_3 = .028$  (Table 39).



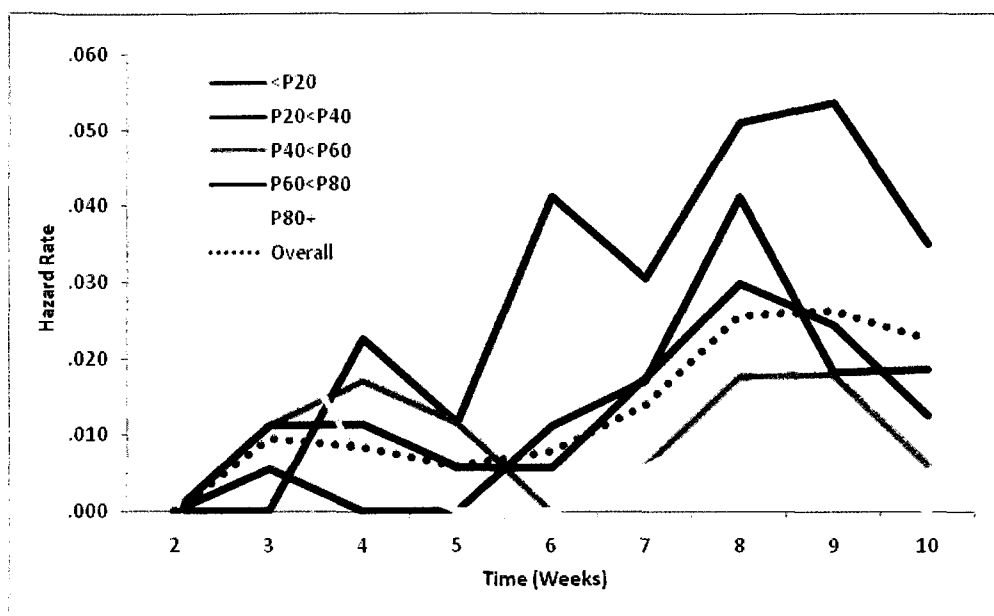


Figure 44. Survival and Hazard Functions for CRC Scores

Table 39. Summary of Survival Analysis for CRC Scores

CRC	N	# DISC	Prop. Surviving	Max Hazard	Week
<P20	179	39	.782	.054	9
P20<P40	179	19	.894	.041	8
P40<P60	180	15	.917	.018	9
P60<P80	179	20	.888	.030	8
P80+	180	11	.939	.028	3

For students coming from the province's CEGEP system, it was previously demonstrated that those in the lowest quintile had a significantly higher probability of dropping out of their online course. When the courses were investigated on their own, a significant difference was uncovered for students in the Personal Finance course ( $\chi^2_{(4,N=485)} = 16.71, p < .01$ ), but not for the course Encountering World Religions ( $\chi^2_{(4,N=365)} = 7.71, p = .107$ ), nor for Chemistry in our Lives ( $\chi^2_{(4,N=718)} = 4.22, p = .377$ ).

The source of the significant difference for FINA 200 was traced to the students in the lowest CRC quintile, as compared to all other groups ( $p < .05$ ), with the exception of the group "P40<P60" ( $p = .069$ ). For students in the lowest quintile of CRC scores, they experienced a 12%

hazard rate in week six, and 15% of the students still enrolled in the course during week nine withdrew by the end of the week.

For many of the students enrolled in the religion course, the peak hazard rate was reached in week 8 when 12% of the students in the “< P20” and 10% of those in the “P20 < P40” CRC groups dropped out. Students in all CRC groups, with the exception of the highest quintile, also experienced a slight increase in their hazard rates in the final week before the DISC deadline. That being said, students in the lowest quintile group who were enrolled in the finance course experienced elevated hazard rates during the fourth, sixth, and ninth weeks of the semester, subsequently contributing to the tri-model nature of the distribution.

### **Variable: Cumulative GPA**

When the dropout patterns were compared based on the students’ cumulative grade-point average, a Wilcoxon test identified a main effect,  $\chi^2_{(4, N=1570)} = 45.34$ ,  $p < .01$ . A pairwise comparison using the Log Rank test revealed that students with an “F” cGPA had a different retention pattern than all other students ( $p < .01$ ). In addition, as was the case in the previous analyses involving cGPA, it was found that students with an “A” or “B” average differed in their retention behaviour compared to all other students ( $p < .05$ ). Students with a higher cGPA had better survival rates (and lower hazard rates) than students with lower averages (Table 40).

As Figure 45 shows, there was a sudden increase in the hazard rate among students who had a cGPA that was approximately 0 during week seven, where it suddenly increased to 12.1%. The hazard rate of these students remained high until the deadline when it reached its apex ( $p_{10} = .128$ ). Students with a “D” cGPA experienced an above-average hazard rate in the last two weeks of their course ( $p_9 = .047$ ,  $p_{10} = .049$ ), whereas students with a “C” average had a peak rate of 3.2% during week eight, but their overall attrition remained under the average throughout the semester.

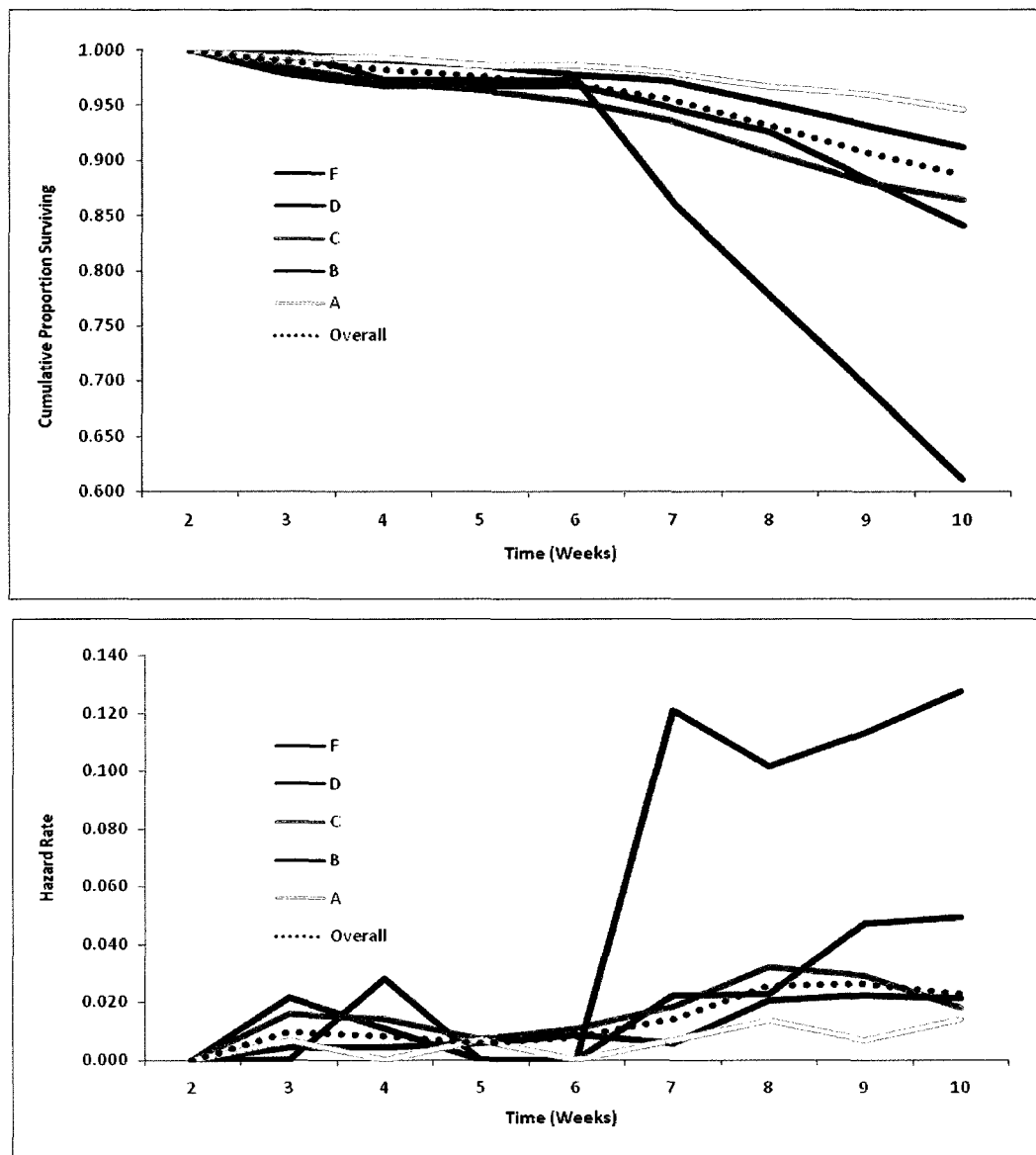


Figure 45. Survival and Hazard Functions for cGPA

Table 40. Summary of Survival Analysis for cGPA

CRC	N	# DISC	Prop. Surviving	Max Hazard	Week
F	36	14	.611	.128	10
D	94	15	.840	.049	10
C	573	79	.864	.032	8
B	717	63	.912	.022	9
A	150	9	.940	.014	10

When the courses were investigated separately, statistically significant differences in the retention patterns were found in the chemistry ( $\chi^2_{(4,N=718)} = 34.72, p < .01$ ) and religion courses ( $\chi^2_{(4,N=365)} = 17.82, p < .01$ ), but not for the students enrolled in finance ( $\chi^2_{(4,N=485)} = 45.34, p = .180$ ). Those students enrolled in the chemistry course who had a failing cGPA dropped out en masse during week seven ( $p_7 = .353$ ), whereas students with higher averages did not surpass hazard rates of 3.4%, although this peak was achieved in the same week.

Although no significant difference was found among the retention patterns of the students enrolled in the finance course, students with an “F” cGPA experienced a hazard rate of 15.4% during week eight, whereas the other students hit their peak hazard rate in week nine, though it was much lower.

The hazard rates for the religion course for all the cGPA groups, started rising in week eight. Then, students with a cGPA of a “C” or better experienced their highest rate of attrition. However, of the students in the lowest cGPA group who were still enrolled in RELI 216 at the beginning of week eight, half survived until the DISC deadline. For this same time period, those with a “D” average risked a 27% chance of voluntary withdrawal.

### **Variable: Credits Completed**

Although measuring credits completed is similar to measuring the percentage of the programme completed, it differs in that it includes all university-level credits completed by a student, whether they are programme-related or not. This allows independent students, as well as any students with credits completed before entering a programme, to be included in the measure.

According to the Kaplan-Meier product limit estimator, a significant difference was identified in the survival and hazard functions of the four groups being investigated using the Wilcoxon test,  $\chi^2_{(4,N=1570)} = 28.69, p < .01$  (Figure 46). More precisely, students who have completed 30 credits or less had different attrition patterns than any other group ( $p < .01$ ). No other group was significantly different than the others in their respective retention patterns.

Students with less than 30 credits completed showed hazard rates that were above the overall average throughout the semester, culminating in an 82.4% retention rate, which was the lowest amongst all groups (Table 41).

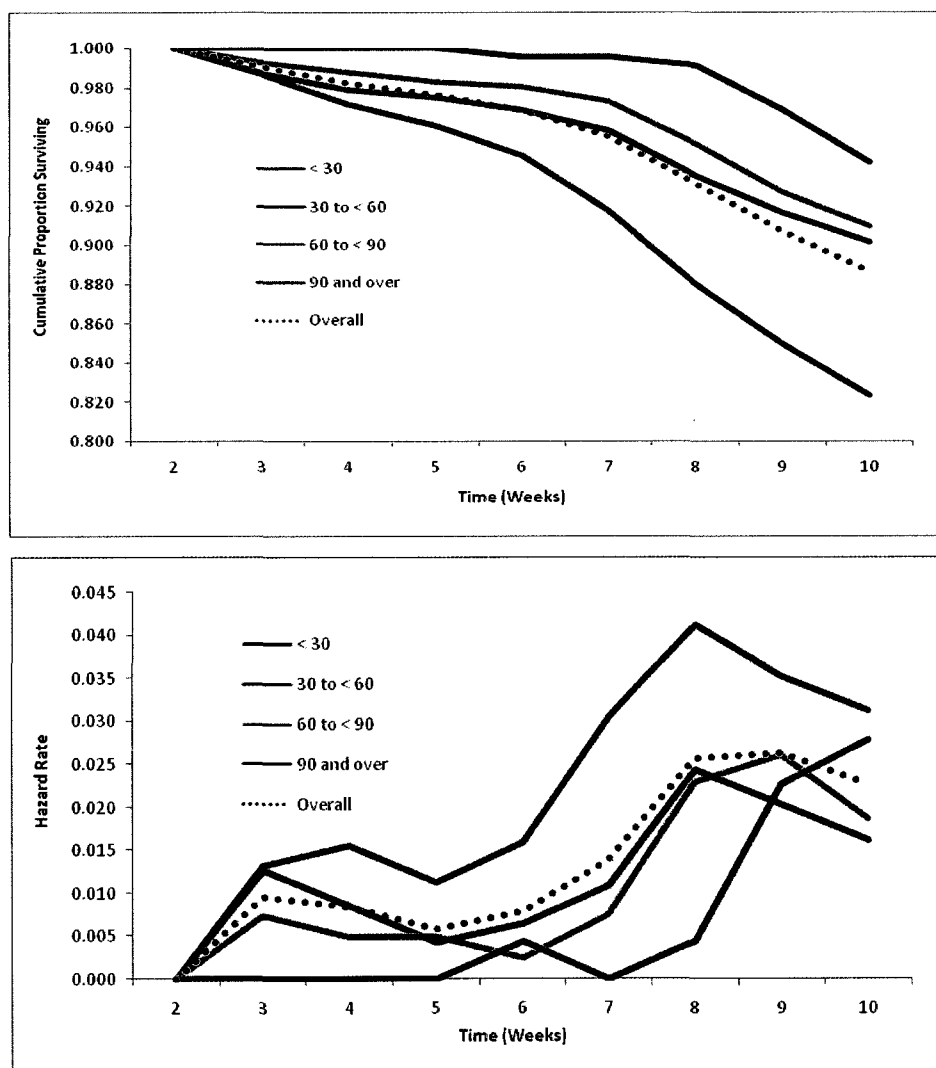


Figure 46. Survival and Hazard Functions for Credits Completed

Table 41. Summary of Survival Analysis for Credits Completed

Credits Completed	N	#DISC	Prop. Surviving	Max Hazard	Week
Less than 30	459	81	.824	.041	8
30 to < 60	477	48	.899	.024	8
60 to < 90	409	37	.910	.026	9
90 and over	225	14	.938	.028	10

When the individual courses were investigated for the credits completed variable, the Log Rank test found a main effect for the finance ( $\chi^2_{(3,N=485)} = 11.42, p < .01$ ) and religion courses ( $\chi^2_{(3,N=365)} = 10.42, p = .015$ ), but not for students enrolled in chemistry ( $\chi^2_{(3,N=718)} = 3.03, p = .387$ ). In FINA 200, the hazard rate during the ninth week peaked at 7.0% for students with less than 30 credits completed, the highest value for all groups. The same group of students experienced an increased hazard rate (10.0%) in the religion course during week eight. Only students who had completed 90 credits or more did not show a peak hazard rate in week eight. Instead, they waited until the last week before the deadline to dropout ( $p_{10} = .051$ ).

### **Variable: Percent of Programme Completed**

According to the Kaplan-Meier product limit estimator using the Wilcoxon test, there is a significant difference between the retention patterns of students based on how much of their programme they have completed,  $\chi^2_{(4,N=1570)} = 12.27, p = .015$ . As Table 42 shows, students who had completed 80% or more of their programme of study had a higher cumulative proportion of students surviving than those who were in the early stages (less than 40%) of their degree ( $p < .01$ ).

Students who had completed less than 20% of their programme experienced the highest hazard rate among all groups in weeks seven and eight ( $p_7 = .044, p_8 = .042$ ), and had the lowest retention rate (85.6%). Those students in the “20<40” group had the second worst retention rate (86.3%) and had a peak hazard rate in weeks eight and nine ( $p_8 = .040, p_9 = .034$ ), as Figure 47 shows.

Students who had accumulated less credits towards completing their programme of study (less than 40%), have been shown to be more likely to drop out of their online course. When this phenomenon was investigated at the course level, only FINA 200 exhibited significantly different retention patterns using the Log Rank test,  $\chi^2_{(4,N=485)} = 10.28, p = .036$ . Specifically, it was found that students in the “<20” and “20<40” groups had elevated hazard rates during weeks eight and nine, with the latter group experiencing the highest rate ( $p_9 = .11$ ).

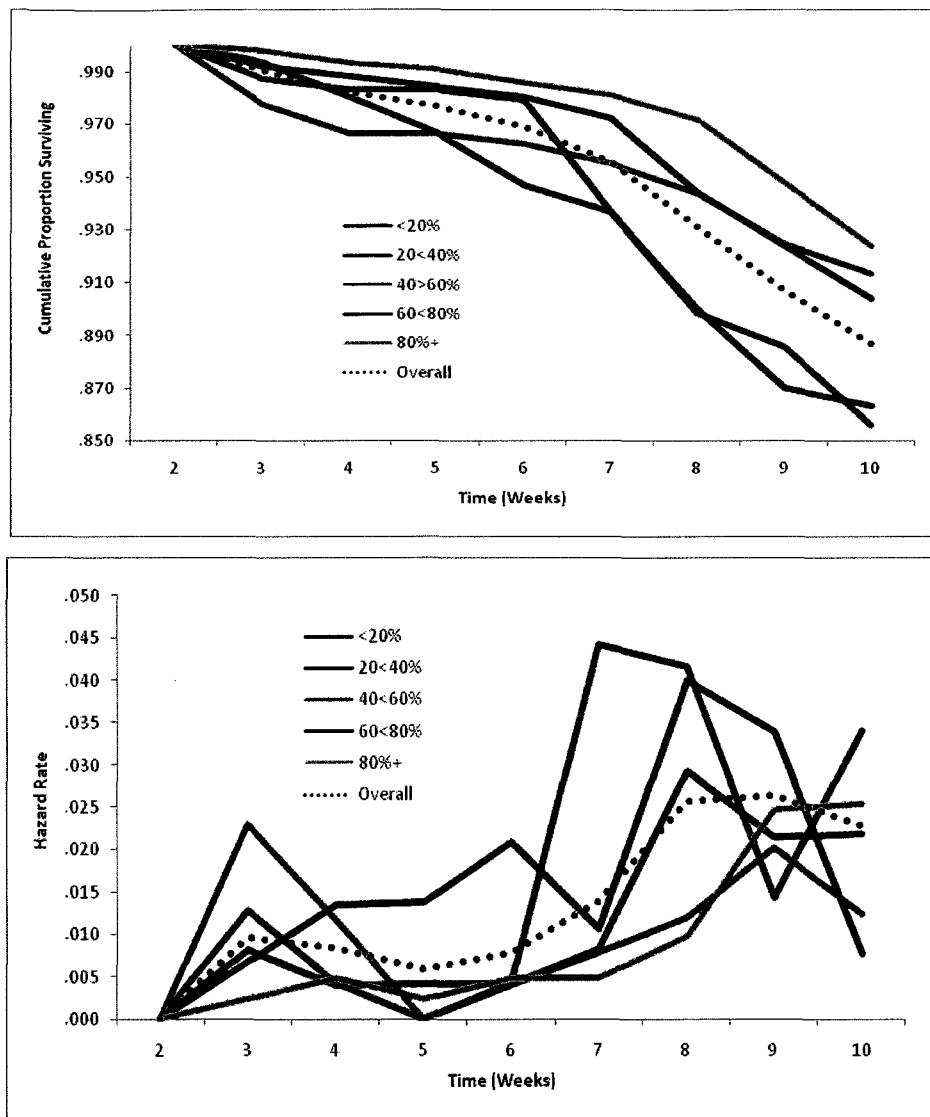


Figure 47. Survival and Hazard Functions for Percentage for Programme Completed

Table 42. Summary of Survival Analysis for Programme Completed

Percent Complete	N	# DISC	Prop. Survived	Max Hazard	Week
<20	236	34	.856	.044	7
20<40	300	41	.863	.040	8
40<60	265	24	.909	.023	3
60<80	250	24	.904	.029	8
80+	420	33	.921	.025	9



Although the religion course did not produce significant differences among the retention patterns of the five groups,  $\chi^2_{(4,N=365)} = 5.67, p = .225$ , there was an increase in the hazard rates of students in the early stages of their degree (<40%) during week eight.

### **Variable: Years in the Programme**

A main effect was revealed between the different levels of the covariate using the Wilcoxon test,  $\chi^2_{(4,N=1570)} = 11.04, p = .026$ , when the data for the amount of years that a student has been in a programme of study is investigated using survival analysis techniques (Figure 48). Pairwise comparisons using the Log Rank test showed that students who had been enrolled in their programme for five years or more had a different survival function than students in their second ( $p = .010$ ), third ( $p = .016$ ), or fourth year ( $p < .01$ ). No significant difference was found in the retention pattern of the students who were in their first year in the programme ( $p = .103$ ).

As seen in Table 43, the most senior group of students (5+ years) had the worst retention rate amongst all groups (82.1%), as well as the highest hazard rate, which occurs in the ninth week of the semester ( $p_9 = .045$ ). Students in the first year of their programme of study experienced the second-worst attrition rate (12.7%) and hazard rate ( $p_{10} = .04$ ). When the survivor functions of the different groups were further analyzed, this time by controlling for student status, no statistically significant differences were found among part-time ( $\chi^2_{(4,N=693)} = 4.77, p = .312$ ) or full-time students ( $\chi^2_{(4,N=877)} = 2.83, p = .586$ ).

When the individual courses were investigated using the Wilcoxon test,  $\chi^2_{(4,N=487)} = 9.85, p = .043$ , only students in the finance course showed different survival functions based on their years of experience. Students in FINA 200 in at least their fifth year of study experienced their highest hazard rate in week nine ( $p_9 = .087$ ), and week six also produced a sudden increase in the chances of dropping out ( $p_6 = .062$ ). In fact, the ninth week proved to be the most popular time to withdraw from the finance course for most students, with the exception of those in their first year (week ten,  $p_{10} = .065$ ).

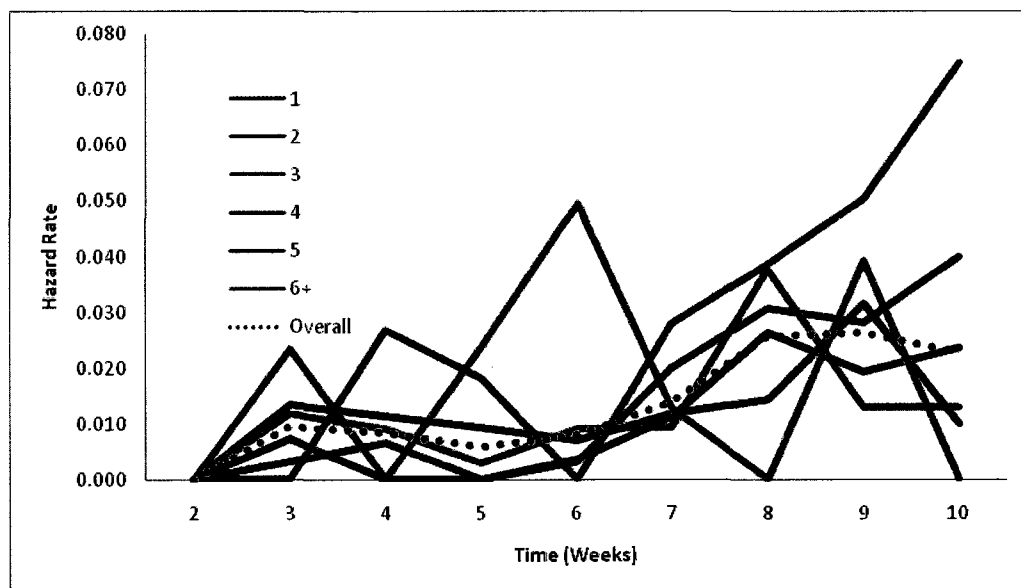
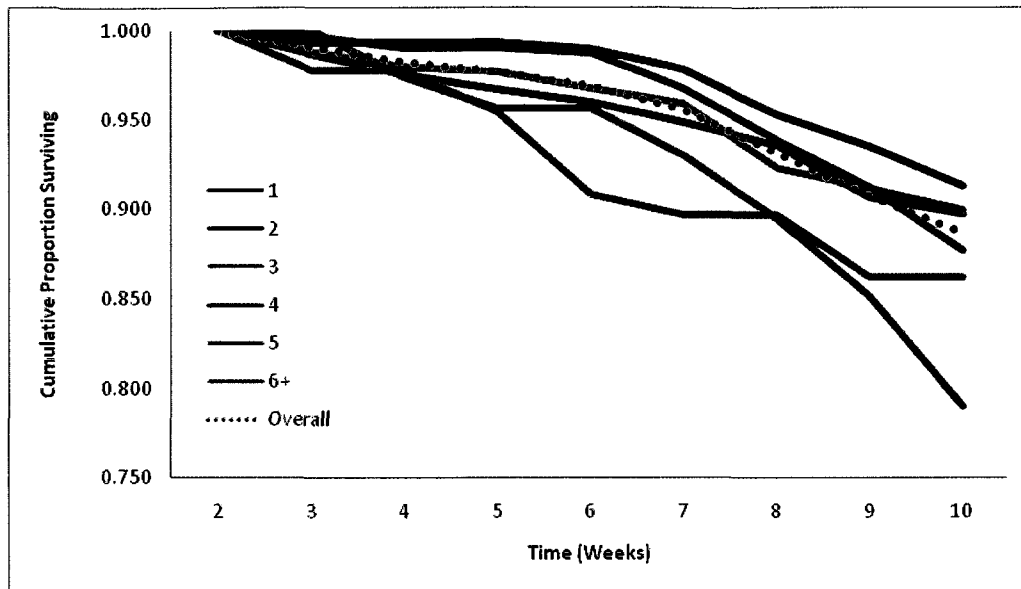


Figure 48. Survival and Hazard Functions for Years in the Programme

Table 43. Summary of Survival Analysis for Years in the Programme

Years	N	# DISC	Prop. Survived	Max Hazard	Week
1	308	39	.873	.040	10
2	447	46	.897	.032	9
3	339	34	.900	.038	8
4	275	25	.909	.026	8
5+	201	36	.821	.045	9

Despite the fact that the individual retention patterns in the religion course were not found to significantly differ, it is worth noting that most of the students who dropped the course did so during the eighth week. Students who were in their third year of a programme had the highest hazard rate ( $p_8 = .116$ ), followed by those in their fifth year or more ( $p_{10} = .105$ ), and then by students in their fourth year ( $p_8 = .095$ ).

### **Variable: Previous Dropouts**

When a student's previous dropout behaviour was factored into the Kaplan-Meier survival analysis, a main effect was identified and validated with the Wilcoxon test,  $\chi^2_{(2,N=1570)} = 771.88, p < .01$ . Students who had not previously dropped out of a course had a better retention rate (96.2%) than all other groups ( $p < .01$ ). Furthermore, students who had withdrawn from three or more courses in the past were more likely to repeat the behaviour than anyone else ( $p < .05$ ).

Students who had dropped out of one or two courses in the past also had a higher proportion of attrition than those who had never dropped out. The hazard rate of students who had previously dropped out of a course, regardless of the number of times this has occurred, was well above the overall trend throughout the semester. However, the probabilities of attrition for these students began a slow and steady rise as of week eight, and peaked during week ten ( $p_{10} = .343$ ). Of the students from this group who began the eighth week still enrolled in their online course, approximately 45% ended up dropping out by the DISC deadline.

Students who had previously dropped out of three or more courses had an abysmal retention rate of 19.3% and a peak hazard rate of  $p_8 = .452$  in week eight. The majority of the students from this group dropped out of their respective course between weeks seven and ten, as shown in Figure 49. In fact, if a student from this group made it through the sixth week of the semester, there was a 65% chance that they would not make it to the end of the semester. A summary of the survival analysis can be found in Table 44.

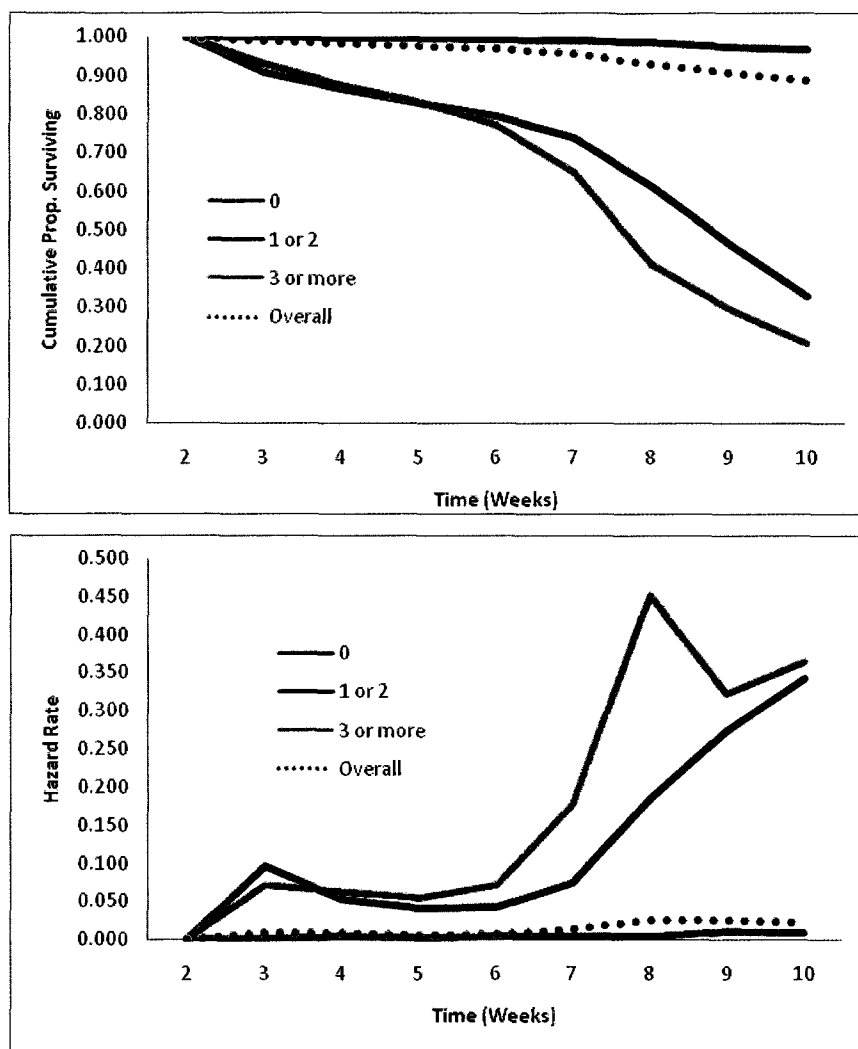


Figure 49. Survival and Hazard Functions for Previous Dropouts

Table 44. Summary of Survival Analysis for Previous Dropouts

# Previous DISC	N	# DISC	Prop. Surviving	Max Hazard	Week
0	1394	53	.962	.011	9
1 or 2	88	60	.318	.343	10
3+	88	71	.193	.452	8

It was previously demonstrated that a student who had dropped out of a course in the past was more likely to voluntarily withdraw from an online course. The Log Rank test confirmed that was the case in all three courses. Students enrolled in chemistry ( $\chi^2_{(2,N=718)} = 446.19, p < .01$ ), finance

( $\chi^2_{(2,N=485)} = 331.80, p < .01$ ), and religion ( $\chi^2_{(2,N=365)} = 263.33, p < .01$ ) were more likely to drop out of their course if they had done so in the past.

In the chemistry course, students who had previously dropped out of a course (one or more times) were at the highest risk of repeating the behaviour during week 7 when their hazard rate was at 17.6%. The rates remained relatively high until the end of the dropout period. Of the students who had not dropped out of CHEM 208 by the beginning of week seven and who had at least one DISC on their record, approximately 42% ended up dropping out by the deadline. The overall retention rate of these students was 47.7%, whereas it was 99.4% for students who had never dropped a course before.

Students enrolled in the finance course that had previously dropped out of a class, withdrew in significant numbers as of week 8 when the hazard rate doubled to 21.2%. The following week saw the rate double again ( $p_9 = .492$ ), until it peaked in the final week at 55.6%. In other words, of the students who entered week eight of the course with a previous DISC on record, roughly 28% survived the academic withdrawal deadline. Overall, students who had dropped out of at least one course had a survival rate of 17.4% in FINA 200. On the other hand, students who had never dropped out of a course had a survival rate of 94%.

In the religion course, the hazard rate of students who had previously dropped out of at least one course soared in the eighth week to its highest value, 55.1%. Although the hazard rate dipped the following week ( $p_9 = .237$ ), it rose again in the final week to 45.2%. Therefore, a student with a history of dropout who entered week eight in the religion course had about a 27% chance of surviving the following three weeks. The overall survival rate of this group of students was 19.0%, whereas 93.4% of students who had never dropped out of a course remained at the DISC deadline. It is worth noting that, in contrast, the hazard rate within all the courses for students who had not previously dropped out of a course never exceeded 2.5%.

## ***Overall Analysis by Course***

When analyzed separately, one notices that the peak drop out period differs with each course. The chemistry course, which has been proven to have a lower attrition rate than the other courses, lost its highest number of students in the seventh week of the semester. Week nine proved to be the peak drop out period for the finance course, and drop outs in the religion course peaked during week eight (Table 45). The Log Rank test confirmed that the retention patterns of the individual courses significantly diverged ( $\chi^2_{(2,N=1570)} = 73.77, p < .01$ ), and the Wilcoxon test concluded that although the survival pattern of the chemistry course was different than the others ( $p < .01$ ), no significant difference was found between the finance and religion course ( $p = .287$ ). The subsequent survival and hazard functions reflect the retention patterns in the individual courses (Figure 50).

As a consequence of its high overall retention rate (96.2%), the hazard rate for the chemistry course remained low throughout the semester and did not seem to show significant variations in the pattern of its overall registration. Its highest hazard rate was achieved during week seven when seven students discontinued ( $p_7 = .01$ ). For students still enrolled in the religion course at the beginning of week seven, fewer than 3% would decide to drop out by the DISC deadline.

In the case of the finance course, its hazard rate nearly doubled between weeks seven and eight ( $p_7 = .013$  to  $p_8 = .024$ ), and doubled again to its highest level in week nine ( $p_9 = .056$ ) before dropping slightly during the final week ( $p_{10} = .034$ ). Of the students who were still enrolled in the finance course at the beginning of week seven, about 12% dropped out by the DISC deadline. The overall cumulative proportion of students that were retained in the course was 83.2%.

The hazard rate for students enrolled in RELI 216 almost tripled between weeks six and seven ( $p_6 = .009$  to  $p_7 = .023$ ), and tripled again to the highest rate of all the courses the following week ( $p_8 = .070$ ). The rate halved during week nine ( $p_9 = .035$ ), before rising again in week ten ( $p_{10} = .047$ ). Of the students still enrolled in the religion course at the beginning of the seventh week,

16% would not survive past the DISC deadline. The overall cumulative proportion of students retained in the course was 80.5%, the lowest of the three courses investigated.

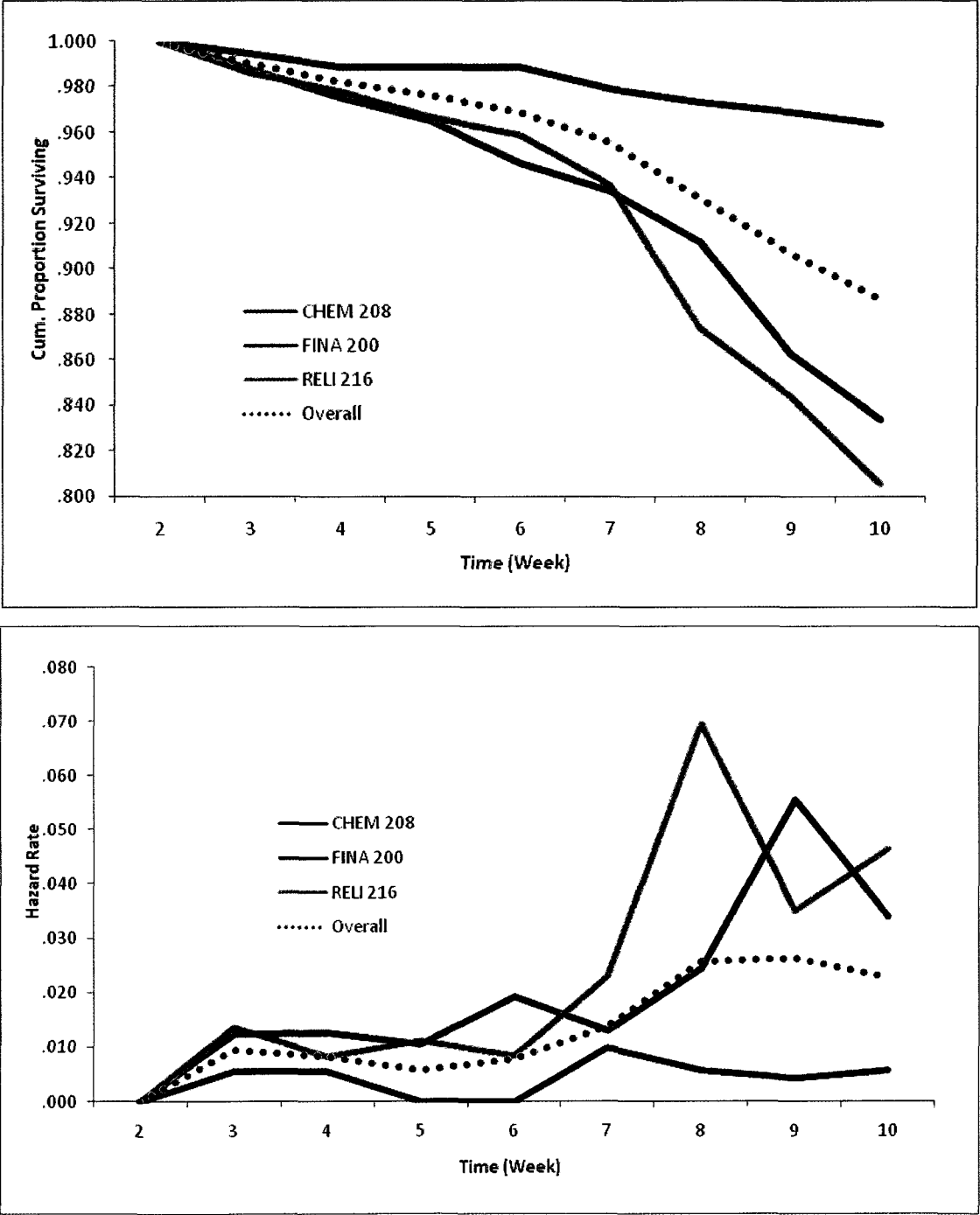


Figure 50. Survival and Hazard Functions by Course

Table 45. Life Table by Course

	Week	# Entering Interval	# DISC	Cum Prop. Retained	Hazard Rate
CHEM 208	2	718	0	1.000	.000
	3	718	4	.994	.006
	4	714	4	.989	.006
	5	710	0	.989	.000
	6	710	0	.989	.000
	7	710	7	.979	.010
	8	703	4	.974	.006
	9	699	3	.969	.004
	10	696	5	.962	.006
FINA 200	2	487	0	1.000	.000
	3	487	6	.988	.012
	4	481	6	.975	.013
	5	475	5	.965	.011
	6	470	9	.947	.019
	7	461	6	.934	.013
	8	455	11	.912	.024
	9	444	24	.862	.056
	10	420	15	.832	.034
RELI 216	2	365	0	1.000	.000
	3	365	5	.986	.014
	4	360	3	.978	.008
	5	357	4	.967	.011
	6	353	3	.959	.009
	7	350	8	.937	.023
	8	342	23	.874	.070
	9	319	11	.844	.035
	10	308	14	.805	.047



## Weekly Survey Results

The goal of the weekly surveys was to provide the researcher with a regular snapshot of the attitudes and motivation of the students enrolled in the targeted online courses. Of the eight questions that were asked every week, four were repeated in order to allow for comparisons and to identify longitudinal patterns. It must also be noted that students who completed the weekly survey consisted of both persisters and dropouts. Of the 1570 students still enrolled in CHEM 208, FINA 200, and RELI 216 at the DNE deadline, 354 unique individuals responded to the survey at some point during the semester, which gave a 22.5% response rate. However, since participation varied on a weekly basis (see Figure 51), it is obvious that not all respondents answered the survey every week. This is especially true if they dropped out.

Overall, students who participated in the weekly surveys completed an average of seven surveys ( $M = 7.29$ ,  $SD = 4.67$ ) over the course of the semester. Also, of the students who responded to the weekly survey, 31 eventually dropped out of their respective online course (8.8% dropout). As was the case with the survival analysis, the responses given between weeks three and ten were analyzed and compared since they were answered within the potential dropout period.

Weekly participation gradually dropped throughout the semester from a high of 230 submissions in week two (the last week before the DNE deadline), to a low of 180 responses in week ten (the week of the drop deadline). Students who responded to the weekly survey and dropped out answered an average of six surveys ( $M = 6.12$ ,  $SD = 4.36$ ) throughout the semester. The gradual decrease in participation during the semester is demonstrated by Figure 52.

Since the goal of this portion of the dissertation is to map the longitudinal patterns pertaining to the attitudes and behaviours of students enrolled in individual courses, the focus will be on reporting those results as opposed to investigating the answers to the individual survey questions. To this end, the responses to the four questions that appeared weekly during the dropout period (between weeks three and ten) were mapped on a longitudinal basis and the

results are presented in this section. The results of the individual questions were retained for use in follow-up studies.

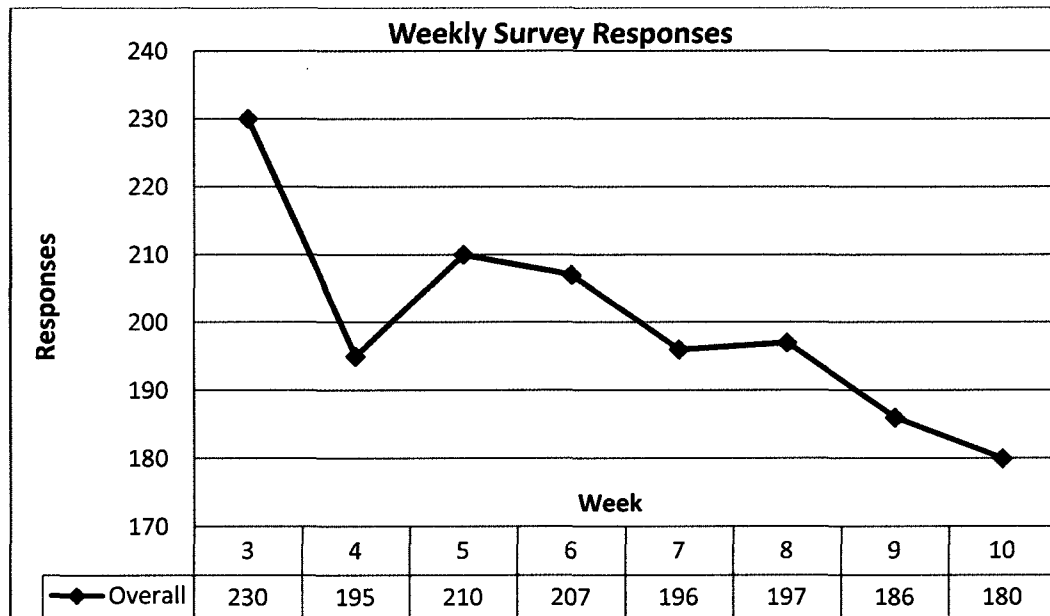


Figure 51. Participants in the Weekly Survey

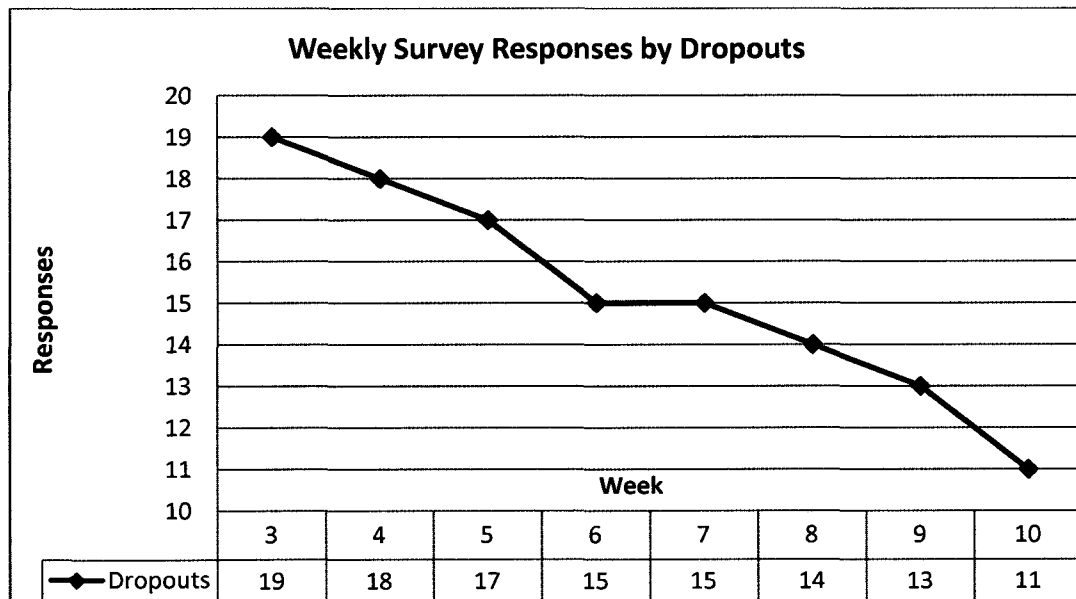


Figure 52. Participants in Weekly Survey who Dropped Out

## Chemistry

A total of 163 students from CHEM 208 participated in the weekly survey (a 22.7% response rate), of which three students eventually dropped the course (1.84% attrition rate). Students enrolled in CHEM 208 had high grade expectations (Figure 53) with little fluctuation throughout the semester. Although the highest expected grade was measured at the end of week eight, the lowest point was achieved two weeks later. This drop was a mere two percentage points. Overall:  $M = 85.64$ ,  $SD = 0.67$ .

Students enrolled in the chemistry course remained very motivated to continue the course throughout the semester (Figure 53). The average scores increased after week four and peaked at over 96% during week seven. The levels dropped suddenly to their lowest point during week nine, but the overall average remained high. Overall:  $M = 94.32$ ,  $SD = 1.57$ .

Students were initially very happy with their decision to enrol in the chemistry course (Figure 53), although the initial value was relatively low compared to the rest of the semester. This value increased significantly as of week six, and continued to rise until reaching its apex in week eight at over 87%. Although the average score dropped suddenly in week nine, the overall consensus among the respondents was that they were satisfied with the course. Overall:  $M = 83.37$ ,  $SD = 2.30$ .

CHEM 208 survey participants reported their highest levels of contact with fellow class members during the fourth week with a score of over 67% (Figure 53). However, this value dropped over the next three weeks until reaching its lowest value in week seven at fewer than 60%. Overall:  $M = 62.55$ ,  $SD = 2.29$ .

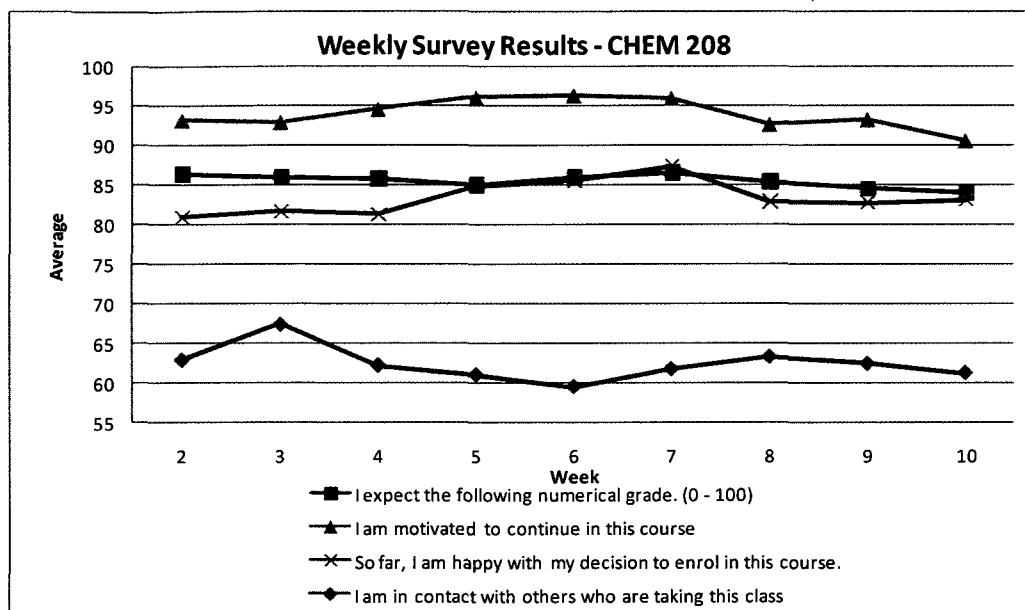


Figure 53. Results of the Weekly Survey for CHEM 208

## Finance

A student's final grade is the expected reward that a student anticipates for their efforts in the course. This measure has been associated with motivation and a willingness to pursue in one's studies (Keller, 1987), as well as an employment salary surrogate (Bean, 1980). In this survey, student motivation was measured via their grade expectation using the question "I expect the following grade".

A total of 106 students from the FINA 200 course participated in the weekly survey (a 21.8% response rate), of which 11 eventually dropped the course (10.4% dropout). According to the results of the question "I expect the following grade" (Figure 54), initial expectations were high (80%) at the beginning of the semester. There was a sharp drop in the fourth week (74.5%) which represented the lowest point of the semester. In the fifth week, grade expectation rose again, but steadily declined throughout the remainder of the semester until it closed at 76% by the DISC deadline. Overall:  $M = 76.99$ ,  $SD = 1.93$ .

Literature on student retention has suggested that a student's intentions and subsequent actions are very much related (Fishbein & Ajzen, 1975). The weekly survey measured the student's motivation by gauging their willingness to pursue the course via the statement "I am motivated to continue in this course". The student reactions to this statement are shown in Figure 54. There was a significant positive rise in week seven, and levels remained high until the apex was reached during the final week leading to the drop deadline. Overall:  $M = 82.29$ ,  $SD = 3.66$ .

Academic persistence has often been associated with one's satisfaction with their experience (Chyung et al., 1998). More precisely, students who are not satisfied with their academic experience are more likely to cease their studies. The weekly survey measured this phenomenon with the statement "I am happy with my decision to enrol in this course". Responses, as displayed in Figure 54, show that the highest satisfaction level among the students enrolled in FINA 200 was achieved in the fourth week, which was followed by a marked decline over the next two weeks. The average rose in week seven, and hovered around 67% until the DISC deadline. Overall:  $M = 67.32$ ,  $SD = 1.46$ .

Feelings of isolation have been one of the main reasons why students have traditionally dropped out of distance education courses (Braxton et al., 2004). To measure this phenomenon, the weekly survey used the statement "I am in contact with others who are taking this course" (Figure 54). With the exception of a slight incline over weeks seven and eight, student responses showed a relatively steady decline throughout the semester until it reached its lowest point in week ten at 48%. Overall:  $M = 56.48$ ,  $SD = 5.86$ .

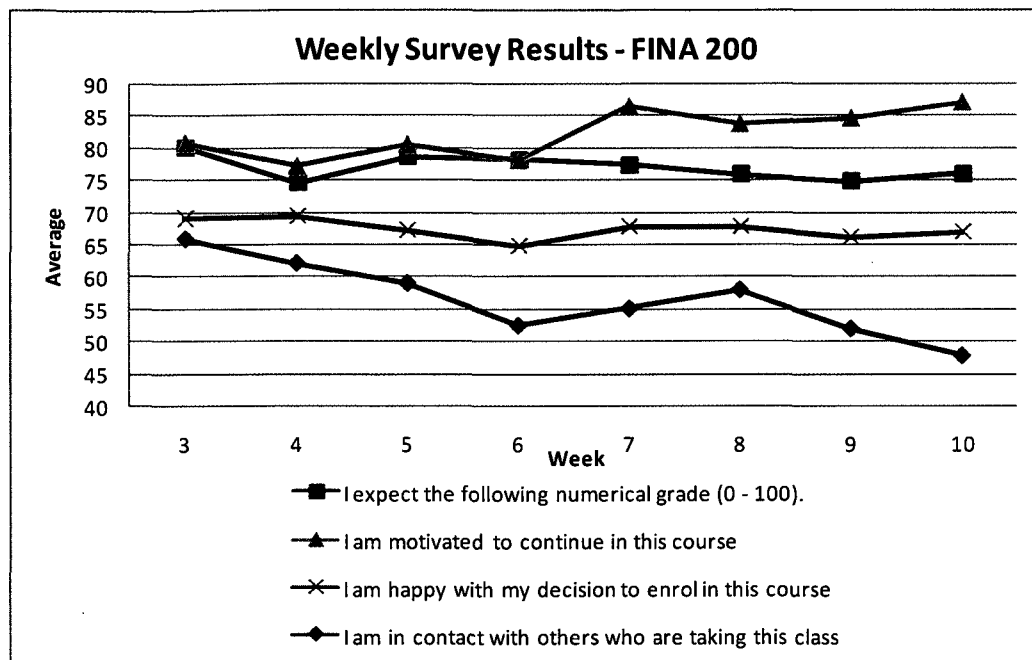


Figure 54. Results of the Weekly Survey for FINA 200

## Religion

A total of 85 students from the RELI 216 course participated in the weekly survey (a 23.3% response rate), of which 17 eventually dropped the course (20.0% dropout). Students enrolled in RELI 216 expected high grades at the onset of the semester. This peaked at about 84% during week three (Figure 55). These expectations gradually dropped during the semester until reaching its lowest point during the last week before the drop deadline. Overall:  $M = 80.71$ ,  $SD = 2.79$ .

Motivation to continue in the course achieved a high during the third week with an average response over 93% (Figure 55). This number dropped suddenly during week four before declining steadily to its lowest point during week eight at 82%. Motivation levels recovered somewhat during the week leading to the drop deadline. Overall:  $M = 88.30$ ,  $SD = 3.41$ .

Students enrolled in RELI 216 were most satisfied about their decision to enrol in the course during week three when the average response was 82% (Figure 55). This value declined

gradually over the next few weeks. A low of 69% was measured at the end of week eight. Overall:  $M = 75.27$ ,  $SD = 4.08$ .

The highest average score for perceived contact with other course participants was measured during the third week, whereas the lowest average was achieved during week two (Figure 55). Values for perceived contact declined for the next few weeks until gradually climbing and ending above-average during the final week leading to the DISC deadline. Overall:  $M = 72.45$ ,  $SD = 2.22$ .

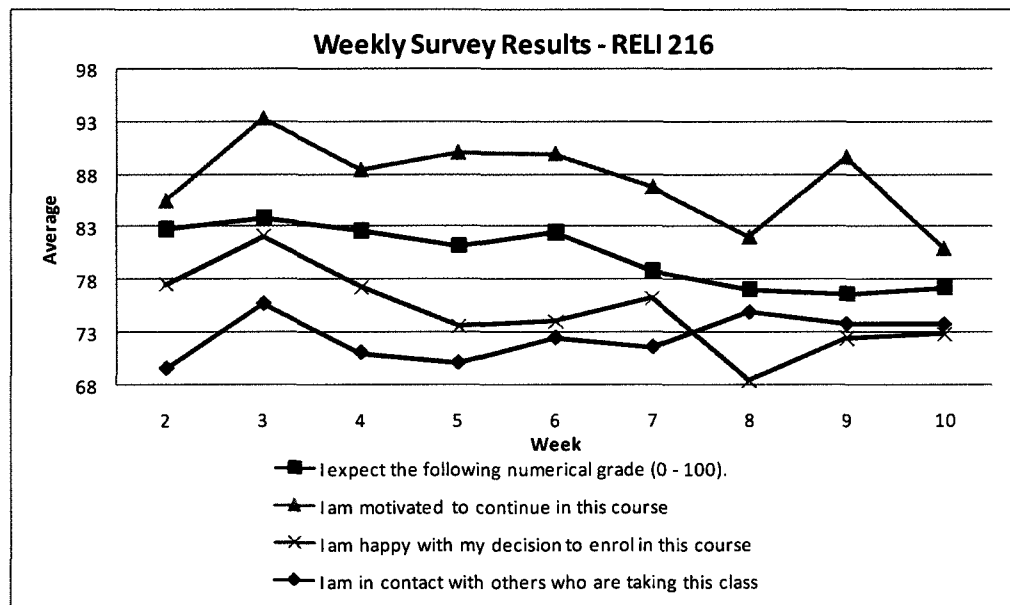


Figure 55. Results of the Weekly Survey for RELI 216.

## Grade Sheet Results

Different types of assessments were used in the three courses, and therefore, each must be investigated separately to analyze the performance of the students prior to the course drop deadline. The following section summarizes the results of the assessments with a focus on participation and attrition.

## **Chemistry**

The CHEM 208 course outline for the fall 2007 semester, stipulated that students enrolled in the course had quizzes scheduled for the fourth, sixth, and ninth weeks of the semester. The first quiz was worth 5% of the final grade, and the remaining two quizzes were worth 3% each.

A total of 94% of the students enrolled in the chemistry course took the first quiz. 99% of them persisted in the course. However, of the 6% of the students who did not complete the first quiz, half dropped out and 26% eventually failed the course (Figure 56). The average grade on the first quiz was 79.5% with a standard deviation of 18.1%.

Similarly, of the 93% of the students enrolled in the course who did the second quiz, only 1% eventually dropped out of the course (a retention rate of 99%). On the other hand, of the students who did not complete quiz two, 38% discontinued and 29% failed the course. Students who completed the second quiz had an average grade of 94.0% ( $SD = 9.5\%$ ).

The majority of the students wrote quiz 3 (92%), and of those students, 1% dropped out. However, of the remaining 8% of the class who did not complete the third assessment, 39% failed and 25% voluntarily withdrew by the DISC deadline. The average grade among students who completed the third quiz was 79.8%, with a standard deviation of 17.5%.

Overall, of the students who dropped out of CHEM 208, 74% did not complete any quizzes, 4% completed a single quiz, 7% completed two quizzes, and 15% completed three quizzes.

## **Finance**

Based on the course outline, students in FINA 200 had assignments due during the third, sixth, and ninth weeks of the semester. Each assignment was worth 12% of the final grade.

The first assignment was completed by 79% of the class, and of these students, 4% dropped out of the course (96% retention). On the other hand, of the students who did not complete



assignment one, 46% discontinued the course (54% retention) and 47% failed (Figure 56). The average grade of the students who submitted their first assignment was 78.0%.

In all, 78% of the class completed assignment two, and of those students, 3% dropped out of the course (97% retention). Of the students who did not hand in the second assignment, 47% failed the course and 49% dropped out (51% retention). Students who completed the second assignment averaged a grade of 79.6%.

Assignment three was completed by 72% of the students, and although some of those students failed the course, none dropped out (100% retention). Of students who did not complete the third assignment, 46% failed the course and 46% dropped out (54% retention). The average grade among students who submitted assignment three was 76.7%.

Overall, of the 62 students who dropped out of FINA 200, 18% completed one assignment, 13% handed in two assignments, 0% handed in three assignments, and 69% handed in no assignments whatsoever.

## **Religion**

According to course outline, students in RELI 216 were required to submit a short response to their readings on a weekly basis. Each submittal was worth 1% of the final grade, for a maximum of 10% (students could miss two responses and still get full marks). In addition, a take-home mid-term exam worth 40% of the final grade was posted for students in the seventh week of the course. It was due the following week.

In all, 34% of the class submitted the first reading response, and of those students, 12% eventually dropped out of the religion course. Of the students who did not submit the first reading response, 23% discontinued the course and 9% failed.

Almost two-thirds of the class submitted the second reading response, and of these individuals, 10% dropped out of the course (90% retention). On the other hand, of the students who did not submit the second reading response, 36% eventually dropped out and 11% failed the course (Figure 56).

The third response to the readings was due in week four and had the highest participation rate with 73% of the students submitting their work. Of those students, 11% eventually dropped out of the course (89% retention). Students who did not submit their third reading response assignment had a 15% failing rate and a 43% attrition rate.

A total of five students who eventually dropped out of the course completed the mid-term exam. Their average grade on the assessment was 57.8%, whereas the class average was 77.0% ( $SD = 12.7\%$ ). Of the students who dropped out, 34% did not complete any of the reading responses, 17% completed one, 18% submitted two, 14% completed three, 7% completed four, 7% completed five, and 3% submitted six reading responses.

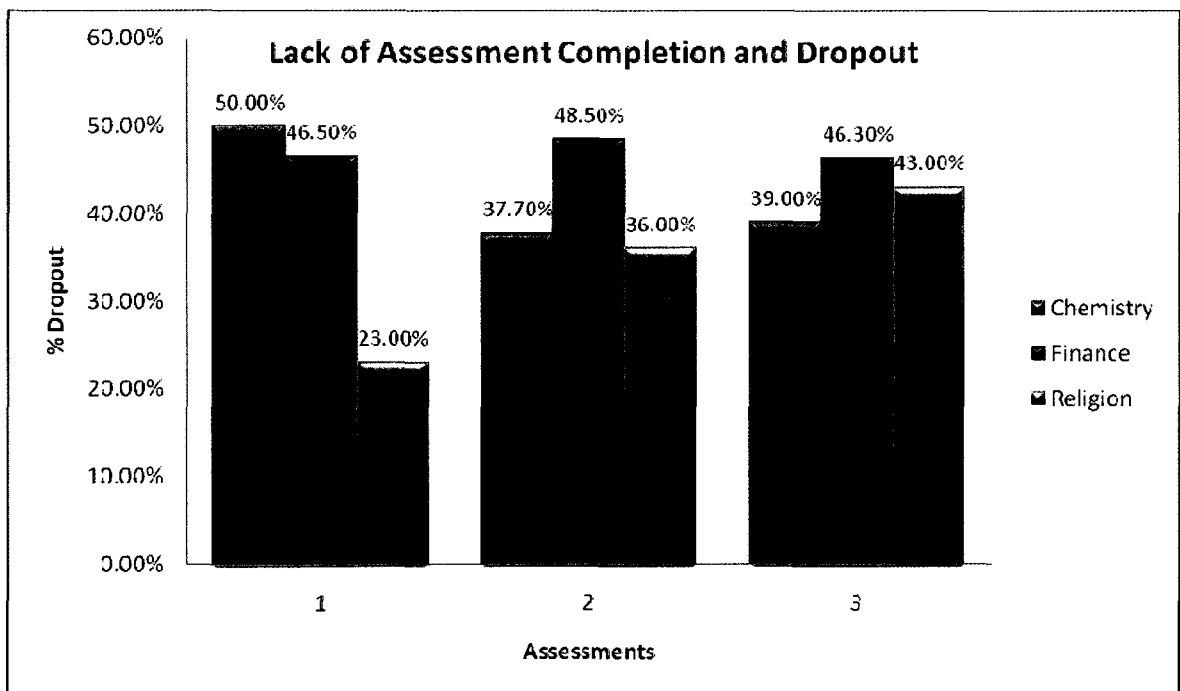


Figure 56. Lack of Assessment Completion and Dropout

## Exit Survey

The following section reports the results of the Exit Survey that was completed by students who dropped out of their online course at eConcordia. Of the 685 students who withdrew, a total of 172 completed and returned the survey, a return rate of 25.1%. As described in the previous chapter, the survey was comprised of three sections: background, reasons for choosing the course, and reasons why the course was dropped.

### *Background*

The results of the background section of the Exit Survey, summarized in Table 46, demonstrate that the majority of students who dropped out had taken an online course in the past (58.7%). It follows that 41.3% of the students who dropped out were enrolled in an online course for the first time.

Of the respondents to the Exit Survey, the majority reported that they worked during a typical school week (70.3%). Two-thirds of the students worked at least 10 hours a week, and 22.1% indicated that they were employed 35 hours or more (full-time work). On average, students that responded worked 18.49 hours a week ( $SD = 16.48$ ).

The Exit Survey asked students to self-report their communication skills in written and spoken English on a scale of 0 to 100. The students were quite confident in their communication skills. The majority of responses were at least 81 in oral (85.5%) and written (76.7%) skills. Students were slightly more confident in their spoken English ( $M = 91.84$ ,  $SD = 9.99$ ) than in their written English ( $M = 89.42$ ,  $SD = 9.55$ ) skills. A repeated measures t-test confirmed this difference,  $t_{(171)} = 4.84$ ,  $p < .01$ . No student rated themselves below 40 on either of the two scales.

Of the students who dropped out, 40.1% did not watch or attend their orientation session. In fact, 15.7% responded that they did not know about it. For those who did watch or attend the

orientation session, 9.3% did not find it useful, 30.2% found it somewhat useful, and 20.4% found that it helped them in their course.

*Table 46. Summary of Background Information from Exit Survey*

Variable	Frequency	Percent	Cumulative Percent
<i>Number of Previous Online Courses</i>			
None	71	41.3	41.3
One	40	23.3	64.5
Two	26	15.1	79.7
Three	15	8.7	88.4
Four or more	20	11.6	100.0
<i>Hours of Work per Week</i>			
0	51	29.7	29.7
1-9	7	4.1	33.7
10-20	48	27.9	61.6
21-34	28	16.3	77.9
35 and over	38	22.1	100.0
<i>Self-Rated Written Communication (in English) <sup>a</sup></i>			
70 and under	14	8.1	8.1
71-80	26	15.1	23.3
81-90	57	33.1	56.4
91 and over	75	43.6	100.0
<i>Self-Rated Oral Communication (in English) <sup>a</sup></i>			
70 and under	8	4.7	4.7
71-80	17	9.9	14.5
81-90	55	32.0	46.5
91 and over	92	53.5	100.0
<i>Orientation Session</i>			
What orientation session?	27	15.7	15.7
Did not watch/attend	42	24.4	40.1
Did not find it useful at all	16	9.3	49.4
Found it somewhat useful	52	30.2	79.6
Yes, it helped me	35	20.4	100.0

<sup>a</sup> Written and Oral Communication self-rate scale 0 – 100

## ***Why they Enrolled***

The second section of the survey investigated the reasons why the students who dropped out had enrolled in the course. The results (Figure 57) show that 81% of the students enrolled in the course primarily because the subject interested them, and 72.1% responded that it was to minimize travel to school. “Commitments at work” was a factor for 41.5% of the survey participants, whereas 31.2% cited “commitments at home”. A total of 31.9% of the students admitted that they enrolled in the course because they expected it to be easier than classroom-based courses, and 37.1% responded that they sought an easy elective course.

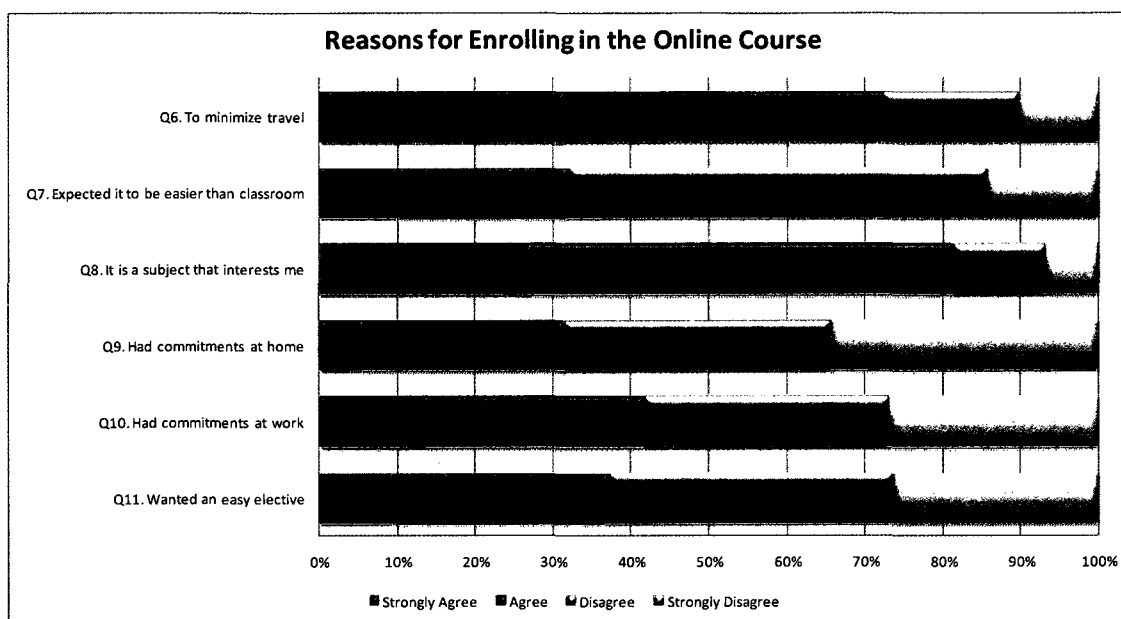


Figure 57. Reasons for Enrolling in the Online Course (Exit Survey)

### ***Reasons for Dropping Out: Survey Questions***

The third part of the Exit Survey consisted of questions pertaining to the reasons why it was decided to withdraw from the online course. The most popular reason given by students for dropping out, shown in Figure 58, was fear of performing poorly and consequently, of lowering their GPA (70.3%). About two-thirds (65.7%) of the respondents felt that they had fallen behind and could not catch up, and 64.5 % had underestimated the amount of time the course would require. A total of 60.4% of the respondents cited that they felt helpless to improve their situation, and 58.8% blamed a lack of proper time management as the reason why they were dropping out. Other popular reasons for withdrawing from the online course included a need to shift priorities to more important courses (56.4%), a mismatch in the course work expectations (54.7%), and the perception that the content was more difficult than expected (48.3%).

Work commitments were to blame in 36.7% of the cases, family commitments accounted for 19.7%, and feelings of isolation from classmates was cited in 25% of the responses. A lack of feedback (28.5%), as well as the timeliness of the feedback (32.5%) was also blamed, as was the confusion in finding help (19.7%). Poor performance on an assessment was blamed for dropping

out of the course by 35.5% of the students, as was a lack of clarity in the requirements to succeed in the course (43.1%).

Also of note was the fact that 3.5% of the students blamed a lack of computer skills, 13.4% cited technical difficulties, and 14.5% mentioned trouble getting started with the course as factors leading to their decision to abandon their online experience.

A correlational analysis was conducted to determine if a relationship existed between certain reasons for enrolling in the course, and those that students blamed for dropping out. The correlation of work commitment as a reason for enrolling in the online course ( $M = 2.28$ ,  $SD = 1.01$ ) and work commitment as the reason for dropping out ( $M = 2.27$ ,  $SD = 0.97$ ) was found to be significant ( $r_{(159)} = .552$ ,  $p < .01$ ). The correlation of the amount of hours worked by a student as a reason for enrolling in the course ( $r_{(159)} = .657$ ,  $p < .01$ ) and as the cause for their attrition ( $r_{(172)} = .442$ ,  $p < .01$ ), was also significant.

Therefore, the more hours an individual worked during the semester, the higher the chances that this was a reason for enrolling in an online course, as proven by a one-way ANOVA,  $F_{(3,155)} = 48.72$ ,  $p < .01$ . Furthermore, a *post hoc* test using the Tukey HSD method indicated that students who agreed that work was a cause for enrolling in the online course worked significantly more hours per week than someone who did not ( $p < .01$ ).

A one-way ANOVA was also positive for a main effect between the amount of hours of employment and subsequently blaming work commitments as the reason for dropping out,  $F_{(3,168)} = 14.63$ ,  $p < .01$ . A Tukey HSD *post hoc* test confirmed that students who cited work commitments as a reason for dropping out of their online course worked more hours per week than students who did not ( $p < .01$ ). Of the students who cited work commitments as being a factor for enrolling in the online course, 62% cited work commitments as a reason that they dropped out.

Similarly, but less evident, a correlation between enrolling in the course because of family commitments ( $M = 2.03$ ,  $SD = 0.91$ ) and dropping the course because of family commitments ( $M = 1.85$ ,  $SD = 0.92$ ) was found to be statistically significant ( $r_{(160)} = .390$ ,  $p < .01$ ). Of the students who indicated that commitments at home were a factor in choosing to enrol in an online course, 42% also blamed their family commitments for dropping out.

*Table 47. Reasons for Dropping Out of Online Course.*

Reason for Dropping Out	<i>M</i>	<i>SD</i>
Underestimated time	2.85	0.93
Afraid that GPA would suffer	2.81	0.96
Fell behind	2.80	0.97
Felt helpless to improve situation	2.71	0.92
Needed to concentrate on other courses	2.67	0.99
More work than expected	2.66	0.89
Course content was too difficult	2.53	0.90
Unclear about what was needed to succeed	2.48	0.98
Work commitments	2.27	0.97
Did not receive timely feedback	2.24	0.98
Waited too long to get started	2.20	0.98
Unexpected commitments	2.19	1.00
Did not perform well on a given assessment	2.17	0.97
Did not receive enough feedback	2.16	1.00
Found it difficult to learn online	2.14	0.89
Difficulties understanding the content	2.09	0.88
Personal issues	2.07	1.01
Felt isolated from classmates	2.05	0.93
Course materials were no longer interesting	2.04	0.85
Lacked the prerequisite knowledge needed	2.02	0.87
Did not know who to contact for help	1.98	0.86
Felt that the course would not help attain goals	1.93	0.81
Family commitments	1.85	0.92
Technical difficulties	1.71	0.77
Trouble getting started	1.70	0.86
Lacked computer skills	1.41	0.56

*Note: Likert scale = 1-strongly disagree, 2-disagree, 3-agree, and 4-strongly agree*

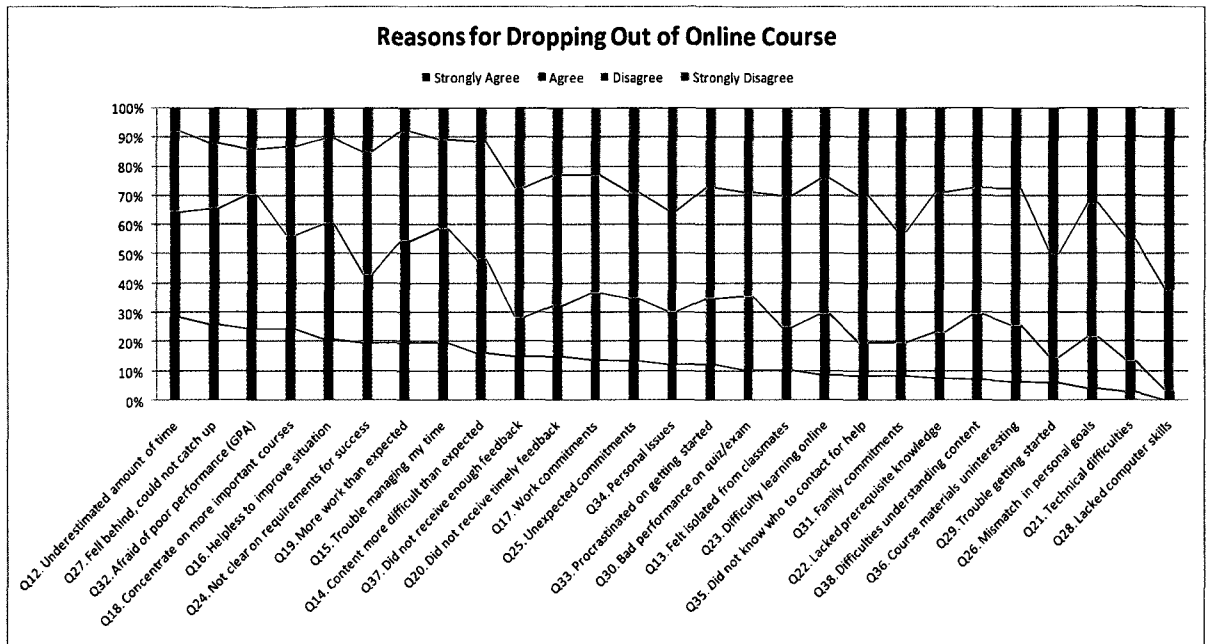


Figure 58. Reasons for Dropping Out of Online Course (Exit Survey)

Students who responded to the Exit Survey whether or not they had prior experience in online courses did not significantly differ from each other in any of the measures regarding the reasons why they enrolled in the online course. However, students who had not previously enrolled in an online course differed from those who had on the reasons why they dropped out. Students without online experience were more likely to:

- Underestimate the amount of time the course would take,
  - $M_E = 2.72, SD_E = 0.94, M_{NE} = 3.03, SD_{NE} = 0.89, t_{(170)} = 2.14, p = .034.$
- Feel isolated,
  - $M_E = 1.79, SD_E = 0.78, M_{NE} = 2.42, SD_{NE} = 1.01, t_{(170)} = 4.62, p < .01.$
- Have trouble managing their time,
  - $M_E = 2.53, SD_E = 0.88, M_{NE} = 2.87, SD_{NE} = 0.94, t_{(170)} = 2.42, p = .017.$
- Feel helpless in being able to improve their situation,
  - $M_E = 2.59, SD_E = 0.97, M_{NE} = 2.87, SD_{NE} = 0.81, t_{(170)} = 1.99, p = .049.$
- Claim that they had more difficulty learning online,



- $M_E = 1.98, SD_E = 0.79, M_{NE} = 2.37, SD_{NE} = 0.98, t_{(170)} = 2.87, p < .01.$
- Claim that they fell behind in the course and did not have confidence that they could catch up,
  - $M_E = 2.61, SD_E = 0.99, M_{NE} = 3.06, SD_{NE} = 0.87, t_{(170)} = 3.02, p < .01.$

Overall satisfaction with their experience with the course was rather low ( $M = 41.34, SD = 32.26$ ). That being said, the scores ranged from 0 (not satisfied at all) to 100 (very satisfied), and as such, there was no consensus as to whether or not the course was considered satisfactory (as can be seen in Figure 59). In fact, over one-third of the respondents to the Exit Survey gave the course they were enrolled in a satisfaction score of 60 or over, and one-fifth ranked the course at 80 or above.

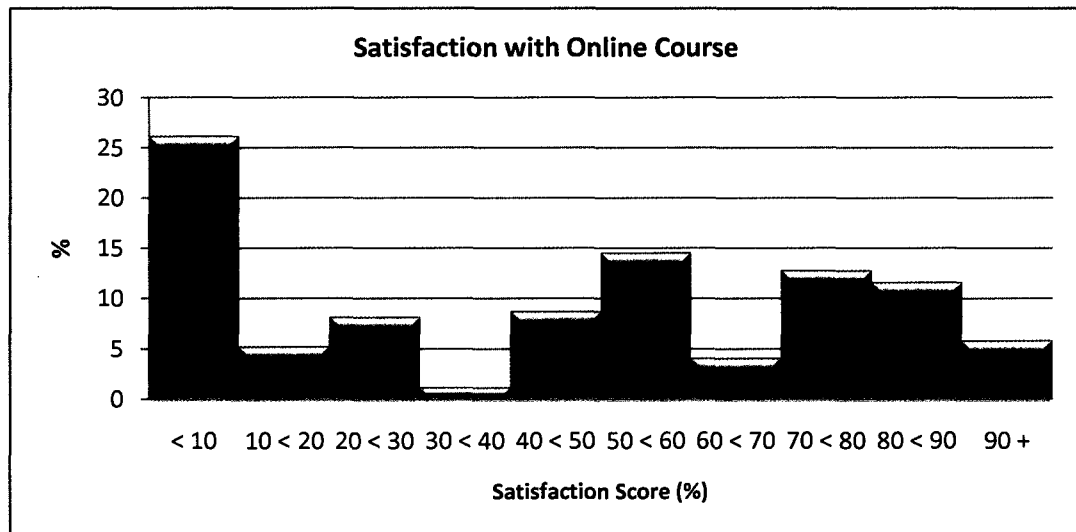


Figure 59. Satisfaction with Online Course

Despite their decision to drop the course, students were rather confident that they would have performed well had they persisted ( $M = 66.30, SD = 18.45$ ). In fact, the majority of the respondents believed that they would have passed the course (91.1%), 59.7% estimated they would have achieved at least a 70% grade in the course, and one-quarter of the students responded that they would have achieved a grade of 80% or more had they persisted (Figure 60).

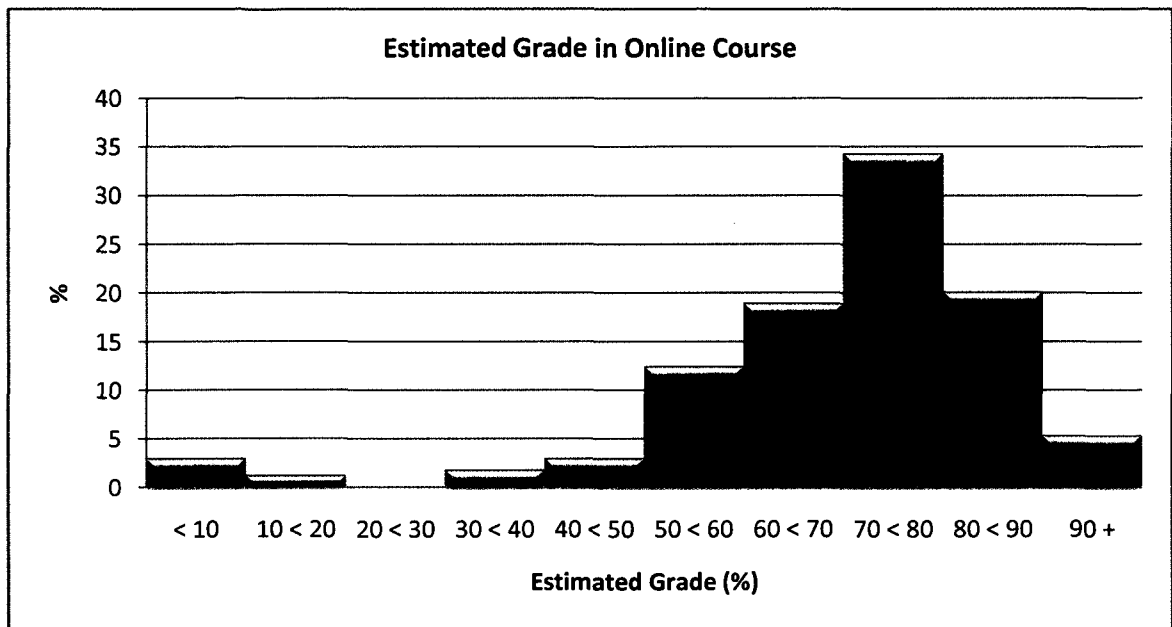


Figure 60. Estimated Grade in Online Course

Despite the fact that they decided to drop out of their online course, almost three-quarters of the students responded that they would consider enrolling in another online course in the future (73.3%). However, students who had taken an online course in the past were more likely to consider enrolling in another one in future when compared to new online learners,  $M_E = 3.22$ ,  $SD_E = 0.83$ ,  $M_{NE} = 2.54$ ,  $SD_{NE} = 1.04$ ,  $t_{(170)} = 4.78$ ,  $p < .01$ . Moreover, 44.8% answered that they would recommend the course they had dropped others, and students who had previous experience in online courses had higher grade expectations than those without it,  $M_E = 68.73$ ,  $SD_E = 17.27$ ,  $M_{NE} = 62.77$ ,  $SD_{NE} = 19.63$ ,  $t_{(167)} = 2.09$ ,  $p = .039$ .

### ***Reasons for Dropping Out: Open-Ended Questions***

The final section of the survey was comprised of compulsory open-ended questions that were designed to amass the concrete reasons that ultimately led to the dropout decision. These individual responses were sorted into one of the four categories described by Garland (1993) as being the main barriers to distance education. According to the data gathered from the students who dropped out of the online courses and responded to the Exit Survey (Table 48), 40.5% of

the factors cited were institutional, 31.2% were dispositional, 18.8% were situational, and 9.6% were considered epistemological.

The primary responsibility for dropping out of the online course was attributed to the student themselves in 63.5% of the cases, with the majority of those barriers being classified as dispositional or situational. However, factors controlled and influenced by the institution figured prominently in all responses, especially those involving multiple factors. In other words, institutional and non-institutional factors were often combined in the student's individual responses. In most cases, the students suggested multiple factors that caused them to drop out. 38.2% of the respondents cited two reasons, and 35.4% cited three factors. The remaining 26.5% blamed their non-persistence on a single factor.

*Table 48. Classification of Garland's Barriers to Distance Education*

Barrier	Primary	Secondary	Tertiary	Total	%
Dispositional	48	45	18	111	31.2%
Epistemological	14	13	7	34	9.5%
Situational	46	16	5	67	18.8%
Institutional	62	51	31	144	40.5%

*Note: N = 170 (2 responses were invalid)*

Table 49 illustrates that the most popular individual factor cited by students was a "lack of communication/feedback" (13.3%). This was followed by a "time management" problem (11.4%), "dissatisfaction with the assessments" (6.4%), "work commitments" (6.1%), and "motivation" (5.8%). Although several students expressed a need to "protect their GPA", it is understood that the only benefit that a student has in dropping the course at that point in the semester is to avoid failing the class (since it is too late to get a tuition refund). Rather, the comments in the open-ended questions provided more concrete reasons as to why the student was in this precarious position (e.g., did not do well on an assignment, too much content to cover in time for the exam, etc...).

Table 49. Individual Reasons for Attrition (Exit Survey)

Factor	%
Lack of Communication/Feedback (i)	13.3%
Lack of Time Management Skills (d)	11.4%
Dissatisfaction with Assessments (i)	6.4%
Work Commitments (s)	6.1%
Lack of Motivation (d)	5.8%
Content too Difficult/Lack Prerequisite Knowledge (e)	5.3%
Focus on Other Courses/Commitments (d)	5.0%
Mismatch in Expectations (e)	4.4%
Incompatible Learning Style (d)	4.2%
Lack of Procedural Information (i)	4.2%
Too Much Content (i)	3.9%
School Commitments (s)	3.6%
Misrepresentation of Services (i)	3.6%
Uninteresting/Confusing Design (i)	3.0%
Family Commitments (s)	2.8%
Personal Problems (s)	2.5%
Technological Problems (s)	2.2%
Lack of Organization/Content Unclear (i)	2.2%
Uninterested in Course Material (e)	1.9%
Problems with Registration (i)	1.7%
Lack of Instructions (i)	1.4%
Did not feel part of the class (d)	1.1%
Health Problems (s)	0.8%
Could not get Course Accredited (i)	0.3%
Poor Academic Advising (i)	0.3%

Note: s = situational, e = epistemological, d = dispositional, i = institutional (Garland, 1993)

## **DISCUSSION**

The purpose of this chapter is to elaborate on the results presented in the previous section in order to isolate the information that would be useful in answering the questions that guide this dissertation. In other words, statistical tests may show that the results were statistically significant, but this does not necessarily mean that they hold practical significance in the eyes of the agents of change in the field of online student retention.

### **Who is Enrolling in Online Courses?**

As was mentioned in chapter two, one of the main issues affecting the assumptions made about students enrolled in online courses is that they are based on dated research carried out in an environment that does not necessarily compare to the current situation. Consequently, the unique characteristics of the population under study are not always taken into account. Distance education may have been the preferred mode of instruction of “non-traditional” students in the past (Kember, 1989), but it does not necessarily follow that it is the case in this research setting. Not only might the characteristics of students taking online courses be different than what the literature has claimed they should be, but the notion of the “non-traditional” student itself may be quite different as well.

The fact that Concordia University is an educational institution that has its own culture and clientele, one that likely differs in many ways from other universities and colleges around the world must be considered. It cannot be assumed that the students enrolling in online courses at Concordia (let alone on-campus courses) are the same students described in other studies conducted in other settings. It is important to analyze the terrain before deciding to build a foundation on it.

The Web-based Learning Questionnaire (WBLQ), coupled with the demographic data gathered from the registration database, served as a means to identify the common traits of students enrolling in the online courses examined in this particular study.

## **Age**

Overall, students enrolling in online courses were relatively young. Three-quarters of the students who answered the WBLQ indicated that they were 24 years-old or younger and only 8% responded that they were at least 31 years of age. These values were further reinforced by the age of the students enrolled in the three targeted courses. There it was found that 71% of the students were 23 years-old or younger, and that the average age of all students was 23.13 years ( $SD = 4.57$ ).

These figures were comparable to previous studies conducted with students enrolled in various online courses at Concordia (Bernard et al., 2004a; Devey, 2006), as well as to the statistics provided by the university which listed the average age of all undergraduate students that semester at 24.39 years-old (Concordia University, 2008). All in all, there was no evidence to suggest that the students enrolling in the online courses differed in age to the ones who opted for the classroom setting.

## **Experience**

The data collected on the university experience of the students enrolling in the online courses does not provide much differentiation among the responses. Over 85% of the students who responded to the WBLQ said that they were somewhere between their first and fourth year at university. This was confirmed by the registration data which measured the proportion of students that were in the first four years of a programme at 87%.

Moreover, the distribution of the responses was almost identical among students in their first three years of study, but dipped slightly among students in their fourth year, and even more so for students with at least four years of university experience. The registration data corroborated

these figures, including the lower proportion of students with four or more years of university experience.

This implies that the online courses were more popular with students who were relatively new to the university (less than four years). Then again, this was likely a reflection of the fact that the majority of the students investigated were registered as full-time students and would therefore take three or four years to complete their programme. In other words, the results were skewed by the nature of the participants.

That being said, perhaps a better way to determine university experience may be to measure the amount of credits that a student had completed at the university level before enrolling in the online course. This was accomplished using the registration information. However, once again, it was found that a similar proportion of students enrolling in an online course had completed fewer than 30 credits, 30 to 60 credits, and 60 to 90 credits. Since a typical (regular) programme requires 90 credits to complete, this finding indicates that online courses were just as popular with new university students as they were with more experienced learners, especially if they were enrolled at university on a full-time basis.

It was also interesting to note that students with online experience slightly outnumbered those who had never previously enrolled in an online course. The proportion of experienced online learners has steadily increased over the past few years at Concordia likely because of the increased opportunities to enrol in online courses, its increased popularity at the university, as well as the numerous returning students to the online environment (Bernard et al., 2004a; Devey, 2006).

## **Student Status**

According to the 2007 enrolment statistics, 62% of the undergraduate students at Concordia were full-time students (taking four or more courses a semester), meaning that 38% were

studying on a part-time basis (Concordia University, 2008). These statistics were identical to ones collected by the WBLQ and to the figures collected from the registration data.

The breakdown of full-time and part-time students who responded to the WBLQ according to gender was also equivalent to the 2007 Concordia University statistics for undergraduate students that semester. According to the university data, about 62% of females and an equal proportion of males were enrolled at the university as full-time students (Concordia University, 2008).

The age discrepancy found between part-time and full-time students enrolled in online courses was also expected. Because part-time students take fewer courses in a semester, they require more time to complete their degrees, and hence, they are significantly older than full-time students. Also, individuals wanting to change their professional careers, or those returning to school after a prolonged absence, will often opt to start with a few courses rather than enrolling on a full-time basis. This is especially true if they have other responsibilities (e.g., family, work) that may impede their full immersion into student life. The negative correlation that was identified between the number of courses in which a student is enrolled and their age group was another indication that as students get older, they enrol in fewer classes.

The proportion of older part-time students in online courses was even higher when compared to full-time students who have been at the university for over three years. Because students enrolled in a regular programme on a full-time basis would normally complete their undergraduate degree in a three-year span, the drop-off in the proportion of full-time students enrolling in online courses after their third year was anticipated. Despite this, the peak in online course enrolments by full-time students occurred in their third year and can likely be explained by the increased opportunity to take elective courses (most core programme requirements have been completed by year three). On the other hand, the highest proportion of online course enrolments by part-time students occurs early in their academic career. This may be explained



by independent students using online courses to accumulate credits (or pre-requisites) in order to enter a programme of study.

Based on this data, it would be imprudent to assume that there was a difference between the status of students in online courses and that of the general student population at Concordia, as full-time and part-time students enrolled in equal proportions in online and traditional classroom courses (Concordia University, 2008).

## **Work**

The fact that three-quarters of the students enrolled in online courses had a job was not a revelation for an urban, commuter university such as Concordia. What was surprising was the number of hours that students worked in a typical week: 66% worked at least 10 hours, 36% worked for over 20 hours, and about 15% worked full-time (35 hours or more a week). This meant that students who were enrolled on a full-time basis in school (four or more courses) would work during the school week. In fact, as seen in the previous chapter, two-thirds of the respondents to the WBLQ were full-time students who worked part-time, and 5.6% answered that they were full-time students who worked 35 or more hours a week.

There was, however, a significant difference between the employment status of full-time and part-time students, as one would expect. Most full-time students cannot afford to work as many hours per week as part-time students due to their academic responsibilities. In fact, five-times as many part-time students worked full-time than did students enrolled at Concordia on a full-time basis.

How this compared to students who were enrolled in traditional classroom-based courses was difficult to ascertain without the employment information from those students. Considering the high number of part-time students enrolled in the university, it was not inconceivable to assume that a large proportion of them had work responsibilities that would deter full-time enrolment. In addition, since full-time students taking online courses must also register for classroom-based

courses, one could argue that these students are no different from each other. In fact, they are likely one and the same.

The fact that 57% of the full-time students who responded to the WBLQ indicated that they were responsible, at least in part, for the financial burden of attending university, would suggest that traditional students needed to work as well.

## **Gender**

At first glance, the results of the WBLQ seemed to reflect a gender gap for enrolment in the online courses. It appeared that female students preferred courses offered online by a 3 to 2 margin over their male counterparts. A similar discrepancy had been recorded in a previous study involving students enrolled in online courses offered by eConcordia (Devey, 2006).

However, when the registration data for the three targeted courses was analyzed, the gap between the sexes had shrunk to merely 6% (53% women, 47% men). This difference was not that far off of Concordia University's 2007 undergraduate numbers where slightly more women were enrolled than men (51% women, 49% men) (Concordia University, 2008). Therefore, it is possible that the difference between the genders, as measured by the WBLQ, was the result of the method in which the data was collected. In other words, because completing the WBLQ was a voluntary exercise for all eConcordia students, the gender gap could simply be explained by a greater willingness to participate on the part of female students.

In order to settle this issue in the future, registration information for all online students could be collected at the end of the semester and compared over a certain period of time. In addition, one should be mindful of the courses that are analyzed since it was also found that the demographic make-up of a course differs based on its subject matter.

## **Language**

Concordia University is an Anglophone institution. It was therefore not unforeseen that the majority of students spoke English as a first language. However, what was somewhat unexpected was that despite the fact that Montréal is the second-largest French-speaking city in the world, native Francophones were outnumbered by Allophones according to the results of the WBLQ and the registration data. That being said, Montréal is a multicultural centre and a hub for new immigrants to Canada and international students, and the demographics of the students enrolling at Concordia may very well reflect this.

The participation in online courses by non-English speaking (especially international) students could be seen as a way to cope with a new language and to acclimatize to Canadian culture and Canadian educational norms in a less intimidating setting. Streaming media, as well as an increased emphasis on text-based communication, allows individuals who may not be proficient in English to take full advantage of the medium. However, further studies using the university registration database would need to be conducted before making conclusions about the disproportionate number of allophones or Francophones opting for one mode of instruction over another.

Although 10% of the enrolments in online courses were by international students, one must consider the fact that university policy (and government restrictions) prohibits these students from being independent students (i.e., they must be enrolled full-time). Thus, these learners were on-campus students who likely enrolled in online courses to complement their full-time course load.

## **Skills**

It is interesting to note that basically every student had made it a habit of using a computer weekly for educational or non-educational purposes before they enrolled in the online course. That being said, students enrolled in online courses were fully aware that they would need to

make use of a computer throughout the semester and would likely not have enrolled in the course if they did not think that they had the technical skills to do so.

More importantly, this finding implies that it is highly unlikely that a lack of computer skills could pose enough of a technological barrier to a student and that it would be a major reason for withdrawing from an online course. This point is further reinforced by the WBLQ survey at the onset of the course, where three-quarters of the students stated that they were confident that they had the computer skills needed to succeed, as well as by the Exit Survey, where a mere 4.5% of the students who withdrew blamed a lack of computer skills for their difficulties. This goes against the literature, where claims that technological barriers were considered a major reason for dropping out have been postulated in the past (Garland, 1993)

In addition, students responding to the Exit Survey expressed high confidence in their communication skills (oral and written) and a lack of these skills did not prove to be a factor for dropping out of the online course.

The fact that full-time students were more active on computers for educational purposes than part-time students was anticipated as the opportunities for educational computing would be greater for students enrolled in more courses. The gender difference shown in non-educational computing may be linked to an increased Internet usage by males for information gathering (Shaw & Gant, 2002).

### **Academic Goal**

Almost all the students taking online courses had a certain university-level degree in mind (99.2%). This indicated that students were motivated to enrol in these courses because they had an academic goal. In fact, students responding to the WBLQ seemed to have high academic aspirations as two-thirds of the participants were aiming for some sort of a graduate degree.

Since the literature review indicated a link between a student's aspirations for academic success and the level of schooling of their parents (Nora et al., 1990), the students in this study were asked about the education of their parents. Students who responded to the WBLQ indicated that the majority of their mothers (62.8%) and fathers (66.2%) had completed a post-secondary degree, but less than half had been awarded a university degree.

The WBLQ results also revealed that males tended to have parents who were more educated than female students. Approximately 58% of male students had parents who had both completed some sort of college degree, whereas this figure was 47% among females. Although there was a positive correlation found between the level of education of the parents and the students' educational aspirations, the value was very small and lacked practical significance.

The influence of academic goals may be more prevalent in the learner's decision to enrol into a university course or programme, as suggested by Tinto (1993). Similarly, although the education of the parents did not seem to have much of an effect on their child's academic goal once they were in university, it could have played a more important role in their initial decision to pursue an undergraduate degree. All in all, there was no evidence that a parent's education had a direct influence on the academic goals of the students in this study.

## **Financial**

The literature also alluded to the effects of the educational financial burden on students as a deciding factor in the decision to dropout (Cabrera et al., 1990). The majority of the students who responded to the WBLQ indicated that they had some level of financial responsibility for their education (60%). They were evenly split into those who paid for their entire education themselves, those who had help from family sources, and those who profited from some sort of government assistance or scholarship. That being said, about 40% of the respondents indicated that their schooling was paid for by another source, most commonly a parent or sponsor.

The socio-economic status of the student, as measured by the educational level of their parents, was influential in affecting their financial burden. In other words, the more educated the parents, the more likely that they were involved in paying for their child's schooling, and subsequently, the less financially strained the student.

The difference between full-time and part-time students with regards to financial burden and years of university experience was far from a revelation. Students enrolled in an undergraduate programme at Concordia on a part-time basis would typically take longer to complete 90 credits than full-time students. Furthermore, chances were that the reason that they could not complete their program more quickly was because they worked to pay their tuition (or had other financial responsibilities), hence the increased financial burden. One could also make the case that since they were taking fewer courses, tuition was more affordable, and consequently, part-time students did not require financial aid.

The inverse relationship between age and student status could likely be explained by the change in the financial burden. As students aged, they acquired more financial responsibilities which were not necessarily education-related. Consequently, students were under additional pressure to work to accommodate this burden. This may have caused them to reduce their course load in order to be able to devote more hours to employment.

This notion was supported by the results of the WBLQ. Of the students who responded that they were fully responsible for paying their tuition, only 10% were not employed. This group also had the highest frequency of full-time workers. Conversely, the majority of students who did not work responded that they were not responsible for paying their tuition. In fact, less than 10% of the students in this category worked full-time.

Similarly, there was an inverse relationship between the financial burden of attending university and student status. Twice as many part-time students as full-timers were responsible for paying for their own studies.

The most frequent response from the students was that they worked part-time, despite their role in financing their studies. This may indicate that enrolling in online courses was a way of allowing students the added flexibility to work, even though they did not necessarily have to in order to finance their studies.

All in all, it seemed as though the student's educational status, their age, and their financial situation were all interlinked in some way. For as the student got older, they shouldered more financial responsibility, and in doing so, they cut down on the amount of courses they were taking in order to enable them to work. But that being said, there was no evidence to conclude that this situation was in any way different than in the regular Concordia classroom, especially among students enrolling in the crowded weeknight classes.

### **Non-Traditional Students**

The literature on distance education is filled with claims that this mode of instruction is tailored to suit the needs of non-traditional learners. According to Rovai (2003), this group consists of older individuals who are typically studying part-time, have more university experience, live off-campus, and likely have family and/or work responsibilities.

In many ways, Concordia University already boasts characteristics of a non-traditional institution. The Sir George Williams campus has roots in the Montréal YMCA and has long been dedicated to providing flexible education to those who would not normally have the opportunity. It is not atypical for a student to enrol in a course given late on a weeknight or to go to class on a Saturday afternoon. Concordia is very much a commuter university. Because it is located in a large urban centre (Montréal) there is no need to invest heavily in an on-campus residence. This is unlike many of the large, traditional research universities in North America, several of which provided much of the early research on retention.

Based on the information gathered, there was no evidence to conclude that the students opting for online courses were different than those enrolling in classroom-based courses at Concordia

University. For the most part, students enrolling in online courses were the same traditional learners seen on and around the two campuses. There was no evidence that students in online courses were older, or have more family and work responsibilities, or were mostly part-time learners, as suggested by Bean and Metzner (1985). In fact, the majority of the students were enrolled in full-time studies. Moreover, the results of the WBLQ and registration data did not support the proposal by Kember (1989) who suggested that it was these same non-traditional learners who were most attracted to learning opportunities offered by distance education, at least not in this research setting.

The fact that Concordia currently does not offer any online programmes at the undergraduate level, and that the courses that were offered online were typically elective courses open to all students meant that any learner who aspired to an undergraduate degree from Concordia must set foot on campus at some point in time. Furthermore, the online courses did not follow an “open” concept where enrolments could occur at any time during the year. Rather, the students enrolled in these courses abided by the university-regulated semester schedule, and therefore, followed the enrolment and exam deadlines. Should these policies ever change, the demographics of online learners could very likely shift to reflect the new reality.

The data gathered in the WBLQ revealed that the older the student, the more likely that they were responsible for paying for their own education. Subsequently, there was a greater chance that older students were enrolled on a part-time basis at the university to allow for their concurrent employment. Conversely, younger students had less financial responsibility, worked less, and were more likely to be full-time students. There was no gender difference found for student status, employment status, or for the financial burden of attending university.

One of the reasons that students were classified as non-traditional in previous studies was because they did not follow the same path to the educational institution as the majority of students attending it. For the most part, it meant that their road to higher education had taken a few detours along the way. Although students who did not go through a “traditional” route to



get to university were among those enrolling in the online courses, there was no evidence to suggest that their presence was significantly different than what would be seen on-campus.

At Concordia University, students who do not come from a traditional academic route and wish to pursue their studies can enrol at the university as Mature Entry students. This is a programme tailored for individuals who are returning to their studies after a prolonged absence. These students tend to be older and have not completed CEGEP, and their hiatus from schooling suggests that they have other responsibilities outside of school (e.g., work, family). Students enrolled in this programme would be the closest fit to the non-traditional category, as previously described by Kember (1989) and Rovai (2003). According to the registration data, 8.5% of the students enrolled in online courses were in the Mature Entry programme, whereas 73% were in a regular programme, and 18.5% in the extended credit programme. This would imply that although non-traditional students enrolled in online courses, they were a minority among more traditional learners.

The fact that the older students make up the minority of the enrolments at Concordia University is by no means a revelation. However, due in part to the echo boom effect in North America, post-secondary institutions are increasingly concentrating their efforts on meeting the demands of the growing number of younger students entering the system. The emphasis is therefore on the expansion of learning opportunities to the newer cohorts of students as opposed to providing added opportunities for higher education to older learners, as is the case in other parts of the world (AUCC, 2007). This means that the unique needs of older and part-time learners could be overshadowed by those who make up the mainstream campus demography.

In order to properly understand the research setting, not only were the individual characteristics of the learners isolated and analyzed, but it was also important to explore their possible effects within the context of the individual courses. Therefore, the demographic information of the students enrolled in the three courses under investigation was also investigated.

## ***Courses***

Although it may be argued that the demographic trends of the students enrolling in the online courses was somewhat predictable, the same cannot be said of the results when the courses were investigated separately and compared to each other. The importance of identifying the population of students in the research setting has been stressed, but describing the learners enrolling in the individual courses must also be considered as this could ultimately influence the strategy used to deter dropout in that unique setting.

Each of the online courses investigated exhibited a different composition in terms of gender, age groups, student status, and ultimately, their dropout rates varied. Furthermore, since their enrolments differed, their effect on the overall registration pattern was in proportion with the amount of students enrolled in the course. For instance, a trend identified in the chemistry course would likely have a larger effect on the overall picture than one in religion. This is another reason that courses should be investigated individually, in concert with a more global assessment.

## **Chemistry**

There were a slightly higher proportion of female students (51.4%) in the chemistry course, and most of the students were enrolled at Concordia full-time (60.7%). The greater part of the females in the course were enrolled on a full-time basis (67.2%), and although the same was true for males, the proportion was much lower (53.9%). Students enrolled in CHEM 208 tended to be younger than in the other courses. In fact, 85.0% of them were under the age of 25, and only 8.1% were 26 years-old or older. This trend was more obvious amongst the female students. The age distribution of females declined from a high of 28% for those who were 20 years-old and younger, to a low of 7.9% for students older than 25. Male students who studied part-time made up the majority of the older students who had enrolled in the course.

Considering the fact that most of the students were young and enrolled full-time, it was no surprise to find that chemistry had the smallest proportion of independent (4.2%) and mature

students (5.7%) when compared with the other courses. However, the high proportion of JMSB students was somewhat out of the ordinary. As well, one-quarter of the students spoke neither English nor French as their primary language and the proportion of full-time international male students was higher than usual.

Overall, CHEM 208 was favoured by students new to Concordia who were young and likely enrolled full-time in a programme. The relatively large proportion of non-native speaking students was likely a product of the subject matter. This course would not require essay writing, whereas chemical symbols and numbers are a more universal language. The high proportion of JMSB students may be explained by the fact that students enrolled in a science programme were not allowed to take this course for credit.

## **Finance**

The majority of enrolments in the finance course were males (56.1%). That in itself was a finding that went against the norm. Of the males enrolled in the course, 51.6% were full-time students and female students were evenly split between part-time and full-time student status.

Overall, the average age of the students enrolled in FINA 200 was greater than in the other two courses. This may be explained by the inflated proportion of students who were over the age of 25, as well as the fact that only 30% of the students were under the age of 22. The older average age of the students enrolled in FINA 200 may also explain why there was a larger proportion of part-time students. Three-quarters of the students over the age of 25 and studying full-time were female, while two-thirds of full-time students under the age of 22 were male.

The majority of the students in the finance course came from the faculty of Arts and Science (54.8%), 28.5% were from JMSB, and 10.7% were independent students. The proportion of independent students in this course was more than double that of those in chemistry and religion. One-quarter of the males studying part-time were registered as independent students.

Overall, the students who enrolled in the finance course were older than those enrolled in the other two courses, and hence, this course represented the highest proportion of part-time students. This fact, coupled with a relatively large share of independent students, indicated that this course was popular amongst students who wished to continue their studies while tending to other responsibilities. Moreover, the topics covered in this course (i.e., mortgages, investments, insurance) cater to individuals who have money, and may explain why FINA 200 was more popular with an older clientele.

## **Religion**

The majority of students enrolled in RELI 216 were female (67.7%), the highest proportion among all three courses. Of those females, 57.1% were registered as full-time students, whereas this figure was 51.7% among males.

A total of 79.5% of the students enrolled in this course were under the age of 25. Unlike the other two courses, students had similar representation across all age groups in RELI 216. However, an unusually high proportion of students from the faculty of Arts and Science (81.1%) and from the CEGEP system (66.0%), as well as a relatively low number of non-English speakers enrolled in this course.

The gender difference seen in this course may simply be a consequence of the subject matter. Although this is purely speculation, male students may prefer a course on personal finance (such as was the case in this study) than one on religion. This course required more text-based communication which was likely the reason for the relatively low proportion of non-English speakers. Although there was no clear consensus about the age of the students in this course based on the age group, further investigation showed a higher proportion of students who were between 21 and 24 years-old, and a lower proportion of students in the over 30 age group when compared to the data gathered in the WBLQ. Based on this, one could speculate that RELI 216 is preferred among English-speaking female students who are looking to complement their full course load.

## **Why did Students Enrol in Online Courses?**

According to the results of the WBLQ the foremost reason for enrolling in an online course was the flexibility that it allowed in the students' schedules. By taking an online course, students were no longer obliged to be in a particular classroom at a particular time for two and a half hours a week. There was a near unanimous agreement with this factor in the survey. Surely this was confirmation that flexibility was the most attractive feature to students who voluntarily select this mode of instruction.

Furthermore, the choice to work at one's own pace, as well as minimized travel time, both scored high in the WBLQ and are probably symptomatic of individuals who value the flexibility and convenience that online courses offer. Reinforcing this argument is the fact that a majority of the students enrolled in the online courses admitted that they expected the online learning environment to be more flexible than the traditional classroom setting.

These findings were not entirely unforeseen considering the nature of the students enrolling at the university, as well as the characteristics of the educational institution itself. According to the demographic information collected by the WBLQ, about 55% of respondents answered that attending university presented a financial strain, and 61.5% indicated that they were responsible, at least in part, for financing their education. The measure for the financial strain of attending university does not provide a direct reason for enrolling in online courses (tuition is the same as on-campus courses), however, if a student needs to work in order to alleviate this financial burden, then perhaps online courses are selected in order to take advantage of that additional flexibility.

According to the demographic information collected by the WBLQ, three-quarters of the respondents were employed in some capacity during the semester. Two-thirds of them worked at least ten hours a week. Therefore, one could assume that employment was indeed a driving force for enrolling in courses delivered online.

Furthermore, the statistically significant positive correlation between hours worked by a student and the self-reported influence of work commitments on their decision to enrol in an online course was additional proof of the influence of employment. In fact, data from the Exit Survey suggested that over 40% of the students cited work commitments as a main factor for enrolling in the online course.

One must also consider the fact that Concordia University is mostly an urban, commuter-style educational institution. Although there is ample public transportation, students must oftentimes travel through traffic and bad weather (especially in the latter months of the fall) to get to their on-campus classes. In addition, the expenses due to fuel costs, parking, and public transit fees add to the financial strain of a student travelling to school. Avoiding travel can also prove to be an important factor in the student's decision to enrol in a course offered entirely online.

Also of note was the fact that one-third of the WBLQ and Exit Survey respondents cited commitments at home as a deciding factor in their decision to enrol in the online course. Although there was no difference between males and females in this regard, it was worth noting that a significantly higher proportion of part-time students (compared to full-time students) enrolled in an online course because of commitments at home. This is an important point to keep in mind since "commitments at home" was the only measure in this portion of the WBLQ that tested positive for a main effect between students who persisted and those who dropped out. More specifically, a higher proportion of students who dropped out had chosen an online course because of commitments they had at home. This was especially the case among females.

It is also true that 12% of the respondents to the WBLQ indicated that the online course was the only class in which they were enrolled that semester, thereby signifying that this medium may have represented a unique opportunity for their continued learning. This would also imply that factors such as flexibility, working at one's own pace, and reducing travel time, were all major players in their decision to opt for this course over one in a classroom environment.

Although there was a limited selection of courses that students could take online, a course must still elicit learner interest. Since all the online courses offered by eConcordia were elective courses (i.e., they are not core programme courses) one would expect that a student would at least have an interest in the subject in order to enrol in it. This notion was supported by the results of the WBLQ and the Exit Survey which demonstrated that a majority of the students cited a genuine interest in the subject matter as a reason for choosing the course.

In addition, since these courses are offered entirely online, one would hope that any student enrolling in a course was confident in their computer skills. More than three-quarters of respondents to the WBLQ expressed confidence in their computer skills as one of the reasons why they enrolled in the online course. This number would likely be higher if the respondents who were enrolled in the course "Introduction to Computer Usage" were removed from the calculation.

Several students admitted that they enrolled in an online course because they wanted an easy elective (39%), and because they thought that a course offered online would be easier than one offered in a classroom environment (38%). In fact, students who had previous experience at university were more likely to enrol in the online course because they sought an easy elective as compared to new students.

However, one must be cautious in interpreting this finding since elective courses oftentimes serve as a means of gaining credits with minimal burden to core courses, especially among full-time students. About half of the students responded that one of the reasons for enrolling in the online course was that it was recommended to them. Although this does not necessarily mean that the recommendation was given because the course was considered to be easy, the positive correlation found between these measures in the WBLQ suggests that this as a possibility.

In fact, three-quarters of the students enrolled in the chemistry course who responded to the WBLQ said that the course had been recommended to them, and over half admitted that they

took the course because they expected it to be easier than a classroom-based course (52.6%). Furthermore, 60.5% of the same students admitted that they enrolled in CHEM 208 because they wanted an easy elective. These values are all well above the overall averages for these measures. In addition, although 60% of the students claimed that they enrolled in the course because it was a subject that was of interest to them, this value was well below the overall average of 80%. This suggests that the subject matter may not have been the only factor that influenced their decision to enrol in the course.

More than half of the students enrolled in the finance course responded that the course had been recommended to them, and 42.0% acknowledged that they enrolled because they expected it to be easier than a classroom-based course. The majority of the students declared that they were taking the course because it was a subject that interested them (83.3%), and 42.9% confessed that they were seeking an easy elective course. In other words, these values were very much in-tune with the overall results for these measures. Students taking the religion course responded in a similar fashion, except that a higher percentage seemed to be interested in the subject (90.2%), and slightly more were looking for an easy elective course (46.6%).

In other words, one must not discount the effect of alternative motives (beyond subject matter interest) for selecting a given online course. In this case, many students enrolling in the chemistry course seemed to have done so because they sought an easy elective, while those in the finance and religion courses were more likely to have had a genuine interest in the subject matter. However, it should be noted that the average number of students who admitted that they were seeking an easy elective was above the overall average in all three cases. This may explain the high enrolments in all three courses when compared to others offered by eConcordia that semester. That being said, there is no evidence to suggest that the tendency for some students to seek easy (elective) courses online is any different than in the classroom setting.



Of course, there were also those students who were too shy, afraid, or simply reluctant to admit that one of their primary reasons for enrolling in the online course was because they wanted something easy. The WBLQ was issued during the semester, before the final grades were awarded, and this may have had an effect on student responses. Furthermore, the fact that a relatively small proportion of students who completed the survey dropped out meant that the data collected from these individuals could differ from those who did not complete the survey and discontinued.

In order to better understand the motives for enrolling in the online courses among the students who eventually dropped out of them, the results of the Exit Survey must also be considered. All in all, student responses to the Exit Survey did not significantly differ from those in the WBLQ. For instance, 81.0% of the students affirmed that they enrolled in the online course because it was a subject that was of interest to them, 72.1% wanted to cut on their travelling to school, and 31.2% cited family commitments as a primary factor in their decision to select the course. Similarly, the proportion who admitted that they enrolled in the online course because they expected the medium to be easier, or because they sought an easy elective, was virtually equivalent between the two surveys.

Interestingly, it was found that 41.5% of the respondents to the Exit Survey cited work commitments as a driving force in their decision to enrol in the online course. Although there was no direct measure for this in the WBLQ, one assumes that work was also a major factor in the decision to take online courses based on the need for flexibility and the amount of hours worked by the students who responded. All in all, one can conclude that there was no distinction in the motivation for enrolling in the online courses between the students who filled out the WBLQ, and those who completed the Exit Survey.

A breakdown of the enrolments in online courses based on one's progress in their programme showed that students who were in the latter stages of their degree enrolled in the highest proportion in online courses. However, this was more the case for part-time students as the

ratio for full-time students remained fairly constant throughout their programme. This could be a function of the fact that the online courses, which serve mostly as electives, are typically taken at the end of one's programme, once the core courses have been completed.

When the independent variable was changed to years in the program, the proportion of full-time students was higher than part-time students over the first three years, but it suddenly dropped well below it afterwards. Although the former case implies that part-time students are more prone to take online courses when they have completed the bulk of their programme, the latter situation demonstrates the fact that a true full-time student should be completing their degree requirements in three years.

The peak proportion for enrolment of full-time third-year students was also likely caused by an increase in the amount of elective courses that were needed in the final stages of a degree. This was particularly the case in the faculty of Arts and Science and the JMSB, where students enrolled in a regular major programme must complete approximately 24 credits (8 courses) outside of their area of concentration. However, these students would typically complete most of their required courses within the first two years in the programme.

It has also been shown that as students increase in age, the financial burden for their education shifts increasingly onto their shoulders. This may be yet another reason that online courses became popular among part-time students, especially as they got older.

Another phenomenon uncovered by the Exit Survey was the fact that the flexibility that students sought by enrolling in the online courses was not uniquely for employment, travel, or pacing purposes. There was also a rationale among full-time students that online courses offer increased flexibility in the scheduling of their core courses. Once they have scheduled the courses required for their degree, online courses were then used to "top-off" their course load. In fact, several full-time students disclosed that they enrolled in the online course in order to be enrolled in the maximum five courses, sometimes for the first time. They did not want to

register for five on-campus classes since they wanted to avoid spending the entire week on campus. In fact, one student responded that the online course was not treated as a “real class” because it was offered online. Hence, it would be easier to be enrolled in five courses if at least one of them was offered online.

All in all, students enrolled in courses offered online for a variety of reasons, but paramount among them was the flexibility that this medium grants. Whether it was to increase one’s employment opportunities or academic scheduling possibilities, to save on travelling time and costs, to spend more time at home, and/or to manage the pace of the instruction, online courses was considered a way to empower learners. Granted, some students may enrol in online courses for more selfish reasons, but the underlying reality is that, for the most part, Web-based instruction represented an opportunity for the students to augment the command that they had on their own lives by increasing the control they had on their education.

### ***What were their Expectations and Attitudes?***

Student expectations with regards to the online course were gauged primarily from the results of the second section of the WBLQ. However, they were also gleaned from the responses to the Exit Survey and the end-of-semester course evaluation.

The most popular expectation among the respondents was that the medium of instruction would offer more flexibility than classroom-based courses. Almost 90% of the students expected the online course to offer a more flexible environment. This supports the responses from the previous section in which students answered that they had enrolled in the course because of the flexibility that it gave to their scheduling.

Similarly, 80% of the students expressed confidence in their ability to adapt to the self-pacing environment and felt that they were in control of their own fate in the course. Moreover, a comparable number expected to have ample time to devote to the course. This was

approximately the same proportion of students who responded that they had enrolled in the course because they liked the idea of working at their own pace.

By acknowledging the increased flexibility and self pacing of online courses, coupled with their confidence in time management skills and in their ability to influence their own situation, students have established certain expectations about online courses pertaining to the control that they will have over their instruction. But despite this, the majority of the students expected that their online course would be as structured as those offered in the classroom. This meant that despite the fact that they wanted to be able to control their instruction, students still expected the online course to have a certain structure to it.

Also of interest were the responses to questions that dealt with communication issues. Half of the students expected some contact with their instructor, and one-third responded that they expected to be in touch with their classmates throughout the semester. It could be argued that the students were setting rather low expectations with regards to communication throughout the semester, or it may be suggested that these are realistic expectations, possibly based on previous experiences.

That being said, when the data was analyzed while controlling for previous experience in online courses, no main effect was found with regards to communication with the instructor ( $p = .768$ ), or with fellow students ( $p = .096$ ). In other words, regardless of whether or not students had previous experience with online courses, they seemed to establish the same level of expectations regarding communication in their online course.

Students without previous experience in online courses were less likely to expect that they would feel as though they were part of the class. In fact, overall expectation scores for this measure were rather low as less than half of the students responded that they expected to feel as though they were part of the class (43%).

Of particular interest in this portion of the study was that an overwhelming majority of participants responded that they would not be influenced into dropping the course should they underperform on their first assessment. However, statistical analyses identified that students who eventually dropped out of the course were more likely to have responded that a poor assignment or exam pushed them to abandon the course. In fact, of the students who decided to withdraw from the online course and who had responded to the WBLQ, almost half responded that a poor performance on their first test would drive them towards discontinuing the course.

This finding offers two possible explanations. One is that students who lack confidence in their academic ability are more prone to dropping out when faced with an obstacle such as poor performance since they fear that that will not be able to recover from it. It is therefore their low self-efficacy that leads them to abandon the course for fear of failure (or poor performance).

A second possibility is that students who were expecting an easy course and end up jeopardizing their chances at a good grade due to a poor performance on an assessment will discontinue the course rather than risk it negatively affecting their cGPA. This is especially the case for full-time students who may have listed the online course at the bottom of their priority list. Other than the students who admitted that they were looking for an easy course, another indication of this was the fact that students responding to the Exit Survey estimated that they would have expected an average numerical grade of 66% had they decided to complete the course. Their attrition was not a case of fear of failure, but rather a fear of a poor performance.

A few weeks into the course, students were asked about their current situation and attitude via the WBLQ. Just over half of the respondents acknowledged that they had had to make adjustments to their study habits. This suggests that for many of the students it was likely their first foray into this type of learning environment. This assumption was validated by the data collected in the first part of the WBLQ where it was determined that 45% of the respondents were taking their first online course. Despite the added burden of having to change their study

habits, the new students were motivated enough to continue in the course, and therefore had made the necessary adjustments.

When this measure was controlled for experience with online courses, it was found that more students who had no previous experience had to alter their study habits than those who had previously taken online courses. Similarly and likely related, students with no previous online experience also scored higher in agreeing with the statement that they had to learn new computer skills. That being said, the vast majority of the students did not have to learn new computer skills (78%). This finding corresponded with the result in the previous section of the WBLQ which indicated that three-quarters of students enrolled in an online course because they had confidence in their computer skills.

With regards to current communication, 60% of the students responded that they were receiving timely feedback, and a similar proportion answered that they were making use of the class discussion board. These findings indicated that there was plenty of room for improvement regarding communication between the instructional team and the students, as well as amongst the students via the discussion board.

Also of note from these results was the fact that there were several students who responded that they did not feel as though they were part of the class (55%), were having trouble finding time for the course (43%), and approximately 10% answered that they were already considering dropping the course at that point during the semester. In other words, there were some concrete signs of potential problems among some students early in the semester.

## **About the Dropouts**

The information collected using the WBLQ and the registration information provided some interesting insights regarding the similarities and differences between the students who persisted and those who dropped out of their online course. Survival analysis provided key information to pinpoint when students were most likely to voluntarily withdraw. The results of

the weekly survey measured the changes in the attitudes and behaviours of the students during the semester, which may have led to their dropout decision. The Exit Survey attempted to help explain why they left by polling the students who actually dropped out.

It is through the amalgamation of the results of all of these instruments that one can piece together what transpired. Without the use of these multiple data sources, only a partial picture will be painted about the reasons that led to the loss of the student, and much information will remain concealed. For example, it was found that more students dropped out during the eighth and ninth weeks of the semester than at any other time, but this does not identify who dropped out, and more importantly, why they did so. In other words, each instrument provides a piece to the retention puzzle, and all the pieces are needed in order to understand what is happening and ultimately, what can be done about it.

This section will begin by exploring “who” is dropping out by investigating the demographic variables, as well as pinpointing “when” individuals with certain characteristics, in certain courses, are more prone to discontinue. This will be followed by a similar exercise focusing entirely on the unique characteristics of the individual courses, which will incorporate the results of the weekly survey in an attempt to explain “why” the students dropped out.

### ***Demographics***

Of the 4652 students enrolled in all the online courses with eConcordia during the fall 2007 semester, 685 dropped out of their respective online course(s) yielding a retention rate of 85.3% (14.7% attrition). This figure compares well with the results for the three courses under investigation which had an overall retention rate of 88.3% (11.7% attrition). However, there was a notable discrepancy between the overall retention rate and the retention rate of the students who responded to the Web-based Learning Questionnaire. Of the 890 students who completed the WBLQ, a total of 41 dropped out of their online course yielding a retention rate of 95.4% (4.6% attrition). Therefore, the retention rate of the WBLQ participants was considerably higher than the overall retention rate for all online courses in the fall 2007 semester (Table 50).

A previous study on the same population of students had also identified this trend (Devey, 2006). One could make an argument that this phenomenon can be explained by the Hawthorne effect, where individuals who know that they are being studied are more likely to exhibit a short-term improvement in their performance (Spector, 2000). In this case, performance would be measured by their retention in the course, and students who were motivated to complete the questionnaire may have been less inclined to drop out because they decided to participate in the study.

On the other hand, this was more likely a case of the survey participants already being active and integrated in the course, as demonstrated by the fact that they read and followed-up on the e-mail invitation to participate. Learners who intended to withdraw from their online course, for whatever reason, were less likely to be motivated to fill out a survey about their experience. In fact, it is quite conceivable that many of these individuals were behind in their course (or had not even started it), and could ill afford to spend time on an activity that would not immediately improve their situation. It is also quite possible that the reason that they did not respond to the survey was because they had already dropped out.

*Table 50. Retention Rate Comparisons*

Students	Persisted		Dropped Out	
	N	%	N	%
Overall (all courses)	3967	85.3	685	14.7
CHEM 208, FINA 200, RELI 216	1570	88.3	184	11.7
Weekly Survey Participants	354	91.2	31	8.8
WBLQ Participants	849	95.4	41	4.6

The disproportionately low attrition rate among the students who responded to the WBLQ might make it difficult to identify trends in retention. Consequently, the information gathered from these students served primarily to inform the research on the demographics of the students enrolling in the online courses. That being said, this instrument was the only source of attitudinal and behavioural data, and subsequently served as a key data source for those measures.



The primary source for the retention data came from the registration information since there was no response bias in the data that was collected. However, since this data was collected uniquely from the students who voluntarily enrolled in three particular courses, there may be a selection bias based on the differences among the students involved, as well as between the courses themselves. Therefore, any differences that were found with the demographic variables must be interpreted in the context of the individual course. The opposite also holds true as differences between the courses must also consider the students enrolled in them.

When investigating the differences between students who dropped out of their online course and those who were retained, there was sometimes conflicting information from the data collected amongst the various instruments. In these cases, the information gathered from the registration data was considered more authentic.

## **Gender**

Despite research suggesting that females were more likely to persist in distance education courses (Woodley & Parlett, 1983; Packham et al., 2004), no overall differences were found with the registration data pertaining to dropout among the genders. Furthermore, no significant differences were found in the retention patterns of the two sexes using survival analysis.

That being said, survival analysis identified a discrepancy between the genders in the final two weeks before the deadline. In week nine, females experienced a 14% greater hazard rate than males. The trend reversed itself the following week when males had an 11% greater hazard rate. The root of these differences could be found within the individual courses.

Although both genders experienced their highest hazard rate in week nine of the finance course, females seemed to be at the origin of the overall inflated hazard rate in that week as it was almost double that of males. In the religion course, both males and females experienced their highest hazard rate during week eight, but the males were likely the source of the overall surge in attrition that week with a hazard rate of 9.3%. This was 3.5% more than that of females

during the same period. The males enrolled in RELI 216 were also responsible for the final bump in the overall dropout rate in the course as they experienced a hazard rate (7.3%) that was more than double that of females.

On the other hand, the data gathered from the WBLQ identified the existence of a gender gap pertaining to attrition. In this case, it seemed that males were more likely to persist than females. In addition, the difference in the retention rates between part-time and full-time students was caused by a higher attrition rate among females enrolled in two courses that semester. That being said, because the WBLQ was a voluntary exercise, and because there was a disproportionately large number of females who responded to it and eventually dropped out (only nine men dropped out), the registration data was considered to be more authentic since it included all the enrolled students in the calculations, albeit for three particular courses.

Another interesting gender gap suggested by the results of the WBLQ involved the level of education of a student's parents. In particular, it was found that males with highly educated mothers seemed to have higher attrition rates than those whose mothers had not continued past high school. In fact, as mentioned in the previous chapter, none of the 110 males who responded that their mothers had not achieved more than a high school degree dropped out. Granted, this finding may be the result of the very few male students who responded to the WBLQ and who eventually dropped out. However, this measure should be included in future attrition studies to allow for further investigations.

The bottom line: There was no evidence to conclude that gender had any direct effect on the overall retention rate of the students enrolled in online courses. The differences in the hazard and survival rates of the males and females enrolled in the various courses can likely be traced to the demographic make-up of the learners in the individual courses.

## **Employment**

The WBLQ was one of only two instruments that collected data on the employment status of the students (the other being the Exit Survey). It is interesting to note that although there did not seem to be a difference in the attrition rate of students based on the amount of hours they worked in a given week, females working full-time were more at risk of dropping out than males. In fact, of the 48 males who responded to the WBLQ and worked full-time hours, none dropped out of their online course. On the other hand, 10% of the females in the same position eventually dropped out. Again, one must be cautious before jumping to conclusions with this information due to the gender imbalance with the responses to the WBLQ.

Roughly one-third of the students who responded to the Exit Survey reported that they did not work and two-thirds declared that they worked at least 10 hours a week (including 22.1% who worked full-time). These values were comparable to the responses from the WBLQ and suggest that there was no difference in the employment status of the respondents to the two surveys.

It was found that the employment status of the students played an important role in their attrition if they had enrolled in the online course because of their work. More precisely, students who responded to the Exit Survey that their employment was a major reason why they enrolled in the online course were more likely to have dropped out for the same reason. However, there was no evidence to suggest that students who worked more were more likely to discontinue their course than those who worked less.

The bottom line: Students who enrolled in the online course due to their employment were more likely to drop out of the course for the same reasons. However, there was no evidence to suggest that employment on its own was a cause of student attrition. Future studies should key in on the possible indirect effect of gender on attrition based on a student's employment status.

## **Student Status**

As suggested by Moore et al. (2002), the educational status of the student seemed to be an important predictor of retention in online courses. The registration data showed that students studying part-time dropped out at more than double the rate of full-time students. This finding was also confirmed using the WBLQ data, which identified a similar gap between full-time and part-time students. Therefore, not surprisingly, a significant difference was identified between the retention patterns of students based on their educational status using survival analysis.

However, what was only made evident through survival analysis was the slight increase in the gap between the two groups of students as of week four, followed by a surge in the hazard rate among part-time students during weeks eight and nine. Once again, the individual courses were at the root of the diverging hazard functions.

For instance, when the finance course was isolated, one concludes that the hazard rate of part-time students was triple that of full-time students, particularly during week nine, and it remained high the following week at the DISC deadline. The difference in retention rates between part-time and full-time students enrolled in the finance course had been previously confirmed using statistical analysis.

The hazard rate of the part-time students enrolled in the religion course increased six-fold to 11.8% during week eight. This was surely a determining factor for the surge in the attrition rate of the students in the course, as well as in the overall rate that particular week. Although the hazard rate decreased over the next two weeks, it was matched in week ten by a sudden increase in the attrition of full-time students. This helps explain the added “bump” in the overall hazard rate at the DISC deadline.

As was the case with the finance course, part-time students enrolled in religion had a higher attrition rate than those enrolled as full-time students. Unlike finance and religion, no difference was found between these groups of students who were enrolled in the chemistry course.

However, this was likely a function of the fact that the majority of its constituents were full-time students, coupled with the minute attrition rate in the course.

The retention patterns based on student status, when controlled for gender, were found to be significantly different using survival analysis. The hazard rate of part-time females was six times that of females studying full-time during week nine, a remarkable difference. This was likely due to an accumulation of hazard rate highs for part-time females amongst all three courses, which included 9.8% in FINA 200, and 9.5% in RELI 216.

The difference between the part-time males and full-time males was also statistically significant, but much less pronounced than with females. The peak dropout period for part-time male students occurred in week eight, one week earlier than part-time women. However, the hazard rate for full-time male students caught up to that of their part-time counterparts in the final week. The rise in the hazard rate during week eight among male students was a function of the increase in the rate of dropouts in the religion course, whereas full-time male students experienced an increase in the same course in the final week before the DISC deadline. That being said, no statistically significant differences were found between the genders based on their full or part-time status using the registration data.

Since there was no way to verify this result using the registration data, it was worth noting the fact that the source of voluntary withdrawals among part-time students seemed to be based among those enrolled in two courses that semester. On the other hand, the results of the WBLQ suggest that students studying part-time who were taking one or three courses had similar retention rates as full-time students. This could represent an anomaly due to the few dropouts among the WBLQ respondents, but it is a phenomenon that should be investigated in future studies.

The data from the WBLQ and the registration information may offer conflicting information with regards to the existence of a gender gap in the dropout rate of part-time and full-time students,

but there was no question that students studying part-time were more likely to discontinue their online course than those studying full-time. In addition, the survival analysis of the registration data was able to confirm that the retention rates of females studying part-time were lower than everyone else in the three courses being investigated.

Okun et al. (1996) suggested that investment theory can be used to explain the higher attrition rate among part-time students. This theory proposes that part-time students, who have invested less energy into the institution (they are taking fewer courses), will be more likely to drop out. However, Tinto (1993) would argue that part-time students are less socially integrated into the institution because they do not have as many opportunities to do so, and this would be the root cause of their departure.

All in all, part-time students have greater dropout rates due to their increased external commitments (e.g., employment, family) that lessen the attention, efforts, and resources that they can afford to invest into the course in which they are enrolled. The relationship between employment status and student status serves as additional confirmation of the effects of external factors on attrition, as does the additional information gathered from the Exit Survey.

The bottom line: There is ample evidence to conclude that part-time students are more likely to drop out of online courses than full-time learners. The differences in the retention rates among the individual courses were very much influenced by the proportion of part-time students enrolled in them. Although there was no consensus on the differences in the attrition rates when the student status was controlled for gender, the higher rates among females studying part-time warrant further attention. In addition, future studies should measure the actual number of courses in which the student is enrolled in a given semester and not simply rely on their part-time and full-time status.

## Age

Despite the fact that there have been conflicting arguments regarding the relationship between the age of the students and the likelihood of dropping out of their distance education courses (i.e., Diaz, 2002; Xenos, 2002) the results of this study suggested that older students were more likely to withdraw from their online courses. Although the difference between the average age of persisters and that of dropouts was minimal and of no practical significance for educational policy makers, it was nonetheless statistically significant.

The breakdown by age group is a more telling sign of the relationship between age and attrition. A steady increase in the dropout rate seemed to start as of the age of 23 and peaked with the “26 and over” age group where the dropout rate was more than double that of students under the age of 23. Further analysis found that the elevated attrition rate among students over the age of 23 was due to the increasing proportion of part-time students, especially among females. Conversely, the attrition rate of full-time female students was the only group that did not seem to be affected by the age of the student.

Whereas previous statistical analyses concluded that older students were more likely to drop out of their online course, survival analysis pinpointed week nine as the seminal moment during the semester when the eldest students decided to discontinue their online course. Additional analysis showed hazard rate highs during the ninth week of the semester for this group of students in all three courses, especially in finance and religion where the rate reached double-digits.

This was not a surprising finding given that week nine also proved to be the most popular time to drop out among students who were studying part-time (especially females). As was previously observed, older students tended to be part-time learners. The increase in drop out during week nine among older students was mostly due to the fact that females in that age group tended to drop out in all three courses. This was especially the case for females enrolled in the religion course, and for both sexes in the finance course.

The bottom line: Students who were older had a greater tendency to drop out of their online courses, but this was likely because of an increasingly high proportion of older students enrolling on a part-time basis. According to the registration data, roughly one-quarter of students over the age of 25 and studying part-time dropped out of their online course. However, the retention rate of students in the same age group who were studying full-time was 90.6%. In addition, the hazard rate peaks somewhat mimicked the pattern created by part-time students in the survivor analysis.

## **Faculty**

Students enrolled in a program in the faculty of Fine Arts (29.5%), along with independent students (24.2%), represented the highest dropout rates amongst all students enrolled in online courses. Conversely, students enrolled in a programme in the JMSB enjoyed the lowest attrition rate (6.1%).

Students enrolled in the chemistry course did not exhibit significant differences in their retention rates based on their faculty of study, likely because of the low dropout rate in the course. However, in the finance course, independent students were more likely to discontinue than those from the JMSB, and in the religion course, Arts and Science students had better persistence rates than those in Fine Arts or independent studies.

The survival analysis pinpointed an 18.7% hazard rate during week eight for students enrolled in a programme in Fine Arts. This value was at least four times the next highest hazard rate for that week, and more than double the value for the next highest peak at any point during the semester. The source of the surge in the hazard rate during the eighth week can be traced to Fine Arts students enrolled in the religion course, who exhibited a 32% hazard rate. Moreover, Fine Arts students in the finance course experienced their highest probability of dropping out during that same week (19%). Combined, these values pushed the overall dropout rate of students from this faculty above and beyond everyone else. However, one must also consider



the fact that the relatively small sample size of students from Fine Arts in the course would have made their hazard rate more volatile.

The survival analysis identified week nine as the week that coincided with the highest probability of casualties among independent students, although the hazard rate during week ten was only a few percentage points lower. The elevated hazard rate over the last two weeks of the semester was a combination of an increase in attrition among independent students in both the finance and religion courses during that time period.

The lower retention rate of Fine Arts students could be blamed on an unfamiliar style of instruction. Aside from the medium of instruction (online), the content of the course may require more reading, writing, and theoretical instruction than the hands-on, practical courses that they are accustomed to and expect within their programme of study.

For example, where students would normally produce a portfolio of artistic works for assessment in a Fine Arts course, the religion course requires weekly written reflections on their readings, as well an essay-form mid-term exam. This is not to say that students in Fine Arts are weaker students. In fact, their cumulative GPA is at par or better than students from other faculties (Concordia University, 2008). Rather, it may be a combination of an unfamiliarity with the medium of instruction (online vs. in-class), with the type of content they must master (theoretical as opposed to practical), and with the requirements for their assessment in the course (essays as opposed to portfolios). This argument seems to be supported by the fact that students from the faculty of Fine Arts who completed the online course were the only ones whose performance was significantly lower than their cumulative GPA. This is quite abnormal for introductory-level elective courses.

Independent students are allowed to enrol in a maximum of three courses in a semester, therefore their elevated dropout rate may well be a function of their part-time status. However, the fact that their cGPA was inferior to students enrolled in any other programme, coupled with

their substandard performance in the course (for those who completed it), suggests that they may be weaker academic students (Concordia University, 2008). In effect, their poor prior academic performance may be the reason why they enrolled at Concordia as an independent student in the first place. They were likely not strong enough to be accepted into their desired programme of study, or lacked certain qualifications.

The John Molson School of Business has higher admission standards to its programmes, and the relative strength of their students, as demonstrated by their higher CRC and cGPA scores, may help explain their low attrition rate in the online courses. This is also reflected by the fact that students from the JMSB had a significantly higher average grade in the online courses than most, and they outperformed other faculties in their cGPA.

The same argument could be made for the Engineering and Computer Science students. They also have higher entry standards for their programmes and their academic strength could be ascertained by their performance in the online course which was also significantly greater than their cGPA. However, the modest amount of enrolments in these online courses by students in this faculty likely contributed to the failure of finding significant differences in their retention rate and overall performance in the courses when compared to students from the other faculties.

The fact that JMSB students had a significantly lower dropout rate in the finance course should come as no surprise considering the subject matter. Similarly, the nature of the course content may also explain the lower attrition rates for Arts and Science students who were enrolled in the religion course, especially when compared to Fine Arts and independent students.

The bottom line: Students enrolled in a programme in the faculty of Fine Arts, or who do not belong to a programme of study (independent students), were more likely to drop out of the online course. For students in Fine Arts this may be a function of a mismatch in expectations and

learning styles, whereas for independent students, it was more likely because they were academically weaker.

## **Programme Preference**

Despite the fact that an independent samples t-test concluded that a difference existed between the average programme preference of the students who persisted in their course compared to those who did not, a one-way ANOVA could not pinpoint any concrete differences in the overall comparisons. However, when the status of the student was isolated, it was found that programme preference was indeed a factor among full-time students. Full-time students enrolled in their preferred choice of programme were less likely to drop out than students who were not enrolled in one of their top two choices.

Since being admitted into a programme of study was dependent on the perceived relative academic strength of the individual, the relationship between the CRC score and programme preference was expected. Stronger students (with higher CRC scores) were more likely to be accepted into their preferred programme of study. In addition, the lower cGPA of students who were not in their primary choice of programme further reinforced the relationship between CRC and cGPA and subsequently the perceived academic strength of the students.

Previous literature has reported that a student's motivation to persist in their studies is linked to their academic and professional goals (Tinto, 1993). If an individual did not feel that the courses they were taking contributed to their academic and/or professional goals, they would likely seek other options. In this case, other options would include abandoning their online course. Some students taking a full course load decided to pursue their studies in a secondary or tertiary programme in the hopes of performing well enough to warrant a transfer to their preferred programme. In these cases, protecting one's grade-point average becomes vitally important if one is to succeed in achieving this academic goal, and dropping out of courses that risk hindering this objective would be considered an acceptable sacrifice.

On the other hand, part-time students were not affected by the fact that they may not be enrolled in their preferred choice of programme. For many, being enrolled in these online courses was seen as a means to gain entry into their preferred programme by increasing their GPA and number of completed credits. In other cases, they lacked the necessary prerequisite courses for entry into their preferred programme. In other words, students enrolled in part-time studies may not have the same short-term academic goals as those taking a full course load.

The survival analysis of this data further reinforced the disparity between the retention of full-time students based on their programme of preference. Full-time students who were not enrolled in one of their top two choices of programmes had an attrition rate of 15.7% and were more likely to drop out of the finance and religion courses in the final week before the deadline.

The bottom line: Full-time students enrolled in their preferred programme were more likely to persist in their online course than those in lesser-preferred programmes. No effect was found among part-time learners with regards to their programme preference.

## **Program Type**

The significantly higher proportion of mature entry students who dropped out of their courses when compared to those in regular and extended credit programmes proposes a number of possible explanations.

Compared to other programmes, a greater proportion of mature students who were enrolled in an online course were part-time learners. For example, 12.4% of all part-time students enrolled in the three online courses under investigation were registered in the mature entry programme, as opposed to 5.5% of all full-time students. As was previously determined, students who study on a part-time basis were more prone to dropping out than those enrolled in full-time studies. This was even more of a factor when dealing with part-time students in the mature entry programme, as demonstrated by their attrition rate (25%), which was three times that of the same programme students enrolled on a full-time basis.

In addition, mature students were older than those enrolled in regular and extended credit programmes. Since the whole point of the mature entry programme is to allow students who have been out of the education system for an extended period to return to school and pursue their academic goals, this finding was expected. However, as was determined in the previous chapter, the older student was more likely to study part-time and have other responsibilities that may interfere with their studies (i.e., work, family). Consequently, they were more likely to drop out of their online course.

That being said, students in the mature entry programme introduced some additional factors to the retention problem. Their lower CRC scores, inferior performance in their online course, and higher incidence of previous dropout hints that these students may be weaker academically. Granted, CRC scores may be misleading since mature students with these scores have likely dropped out of CEGEP (they could not apply as mature students otherwise). Also, it could be argued that since no statistically significant difference was found in the cumulative GPA scores of the three programmes, mature students are just as strong academically as other students. Nonetheless, the academic performance of these students, both previously and presently, did not seem to be as strong as those enrolled in regular and extended credit programmes, especially when considering the performance of the mature students who completed the online course. Consequently, academic ability may play a more prominent role in the attrition of mature students from online courses.

The survival analysis singled out week nine as the time when mature entry students experienced the highest risk of dropping out. That week, the hazard rate (6.7%) was more than double that of students enrolled in the other programmes. The source of the higher risk among mature entry students could be traced to those enrolled in the finance course. Their hazard rate went from nearly zero to a high of 8.7% in week nine. Similarly, students enrolled in the regular and extended programmes also experienced their hazard rate high during week nine.

Due to the fact that regular programme students greatly outnumbered those in the other programmes, the influence of this group was much more profound on the overall attrition rates of the individual course than those in other programmes. Nonetheless, it was clear from the various analyses that students in the mature entry programme were at a higher risk of dropping out of their online course than any other students, especially during the last two weeks of the semester.

The bottom line: Students enrolled in a mature entry programme were more likely to drop out of their online course than those enrolled in the regular or extended credit programmes. This could be a function of the fact that a higher proportion of mature students were enrolled in part-time studies and did not seem to have as strong an academic foundation. It should also be noted that these students most resemble the definition of non-traditional learners, as described by Kember (1989) and Rovai (2003), at Concordia as they also tended to be older and have come back to school after a prolonged absence.

### **Immigration Status and Source to University**

When looking at the immigration status of the students, international students had the lowest dropout rate, but the difference (4.4%) was not found to be statistically significant using standard statistical procedures. Likewise, survival analysis did not find differences in their retention patterns.

Moreover, international students must be registered as full-time students in order to receive visas and attend Concordia. Therefore, it would be logical to assume that they would be less likely to drop out of courses because it would jeopardize their status at the university. This finding may be influenced by the relatively small number of international students enrolled in the online courses (about 10% of the overall enrolment), thereby making it more difficult to determine differences between them and other groups of students.

Similarly, the retention patterns of the students based on their source to the university did not seem to differ. The additional element that this measure brought to the study was the segregation of the students from Canada into two groups, one based on their attendance of CEGEP, which implies that they are from the province of Québec, and the others from the rest of Canada. The retention rates of these groups of students differed by 1%, and with the exception of the final week before the drop out deadline, their hazard rates throughout the semester were almost equivalent.

The bottom line: There was no evidence to suggest that the source of the student to Concordia, nor their immigration status, had an effect on persistence in online courses.

## **Language**

No significant differences were found for the persistence of the students based on their first language. Although the overall attrition rate of French-speaking students was slightly higher than others, it may be the result of their lower retention rate in the finance course. On the other hand, Francophones had the highest retention rate among all students enrolled in the chemistry course.

The bottom line: No significant difference involving the retention of students based on their first language was found in this study.

## **Performance**

The correlation between previous and future academic performance has existed since the earliest research on retention (Sewell & Shah, 1967; Chase, 1970; Tinto, 1975). Studies typically used high school GPAs and the results on standardized tests (i.e., SAT) to predict persistence in higher education among students going directly from high school to college. The academic criterion that has been established for entry into certain programmes at Concordia is a testament to implementations that are based on that premise.

However, Astin (1972) has argued that prior performance at an institution that most resembles a higher educational setting would offer a more accurate barometer. This was the justification for using the CRC scores and cumulative grade-point averages as measures of prior academic performance.

The use of “la cote de rendement au collégial” as a variable in the study of undergraduate attrition is not without its limitations. CRC scores only apply to students who are products of Québec’s CEGEP system. Furthermore, these measures take into consideration the performance of the student within their cohort in CEGEP, as well as in the last two years of high school. Therefore, CRC scores quantify one’s recent performance relative to others. This measure was somewhat justified by the significantly positive correlation with students’ cumulative GPA, as well as with the subsequent performance of students in the online course as measured by their final grade.

Since there was no standardized way of categorizing the CRC scores, this study opted to rank them and create five quintile groups for comparative purposes. The rationale here was that students in the lowest percentile groups were academically weaker than those in the higher groups, and that the students enrolling in these three online courses offered a sample of scores that were representative of all students enrolled in online courses at Concordia. How this method of grouping affected the power of the comparative analyses is unknown. However, the raw CRC scores were also used throughout the study whenever possible.

It was clear that the average CRC score of students who persisted in their course was greater than those who dropped out, although the actual difference (1.80) did not prove to be practically significant for educational administrators. The fact that the lowest CRC quintile had the highest dropout rate, and the students in the highest quintile group had the lowest attrition rate reinforces the relationship between these measures. Then again, since students were segregated into these groupings based purely on their relative scores, being in the lowest CRC



grouping does not necessarily mean that these individuals were weak students, but rather that they were weaker compared to the others in their cohort.

The survival analysis of the data based on the CRC scores proved the existence of a main effect. However, the only difference identified was that students in the lowest CRC quintile group had a lower retention pattern compared to the other students. This was not surprising considering that the attrition rate of this group of students was at least 10% more than any other group.

In addition, the hazard function seemed to highlight two distinct points during the semester when students in this category experienced significant increases in their hazard rates. The first occurred in the sixth week of the course when students from the lowest CRC group enrolled in the finance course experienced a 12% hazard rate. The second increase was the result of a combination of students dropping out of the religion course in week eight (12%), and from finance in week nine (15%).

Cumulative GPA is a useful measure of academic performance since every student at Concordia University can be included. Also, it helps to gauge student performance in the setting being studied. However, one of the major limitations of using cGPA in this study was that it included the performance of the student during the fall 2007 semester. In other words, since the measure was taken at the end of the semester being studied, it did not serve as a true “pre-entry” variable. Rather, it served to inform the researcher of the overall academic performance of the student at Concordia up to that point in time.

In fact, one could argue that since the performance in all courses of the current semester were included in this measure, the cGPA score represented a viable measure for academic integration at the educational institution, as described by Tinto (1975). On the other hand, if a true “pre-entry” academic integration measure was needed, then the cGPA of students should have been measured at the onset of the semester in question. However, this would only apply to students who had previously earned credits at Concordia.

Much like the CRC scores, there was a marked difference between the cGPA of students who persisted in their course when compared to students who had dropped out. Among the three courses under investigation, 42% of the students who had failing cGPAs dropped out of their course, more than double that of any other score. Although the actual difference between the average cGPA of persisters and dropouts may not be of practical significance to educational administrators (0.4), the obvious relationship between cGPA and voluntary academic withdrawal has more potential for possible interventions.

According to the results of the survival analysis, which confirmed the disparity in the retention rates of the students based on the cGPA, the attrition of students with a failing GPA commenced as of the seventh week (a hazard rate of 12%), and the hazard rate for this group remained in the double-digits until the end of the dropout period. However, due to this small sample size, it was difficult to use the hazard rates as a relative score, especially when investigating individual courses.

An important consideration with regards to the cGPA is that it requires the completion of courses in order to be calculated. Consequently, it is a variable that is measured and revised at the end of each semester. In other words, grade point average can be seen as a measure of academic integration in a program, but it is not particularly useful to describe one's performance within an individual course, especially if the student dropped out of it.

The use of the cGPA as an indicator of the academic strength of a student also poses a problem for new students who have not completed many (or any) university-level credits. Therefore, the ramifications of a poor grade in one course would have a much greater effect on their average GPA than for a student with more university credits. One may also argue that a student's first semester at university is the most demanding due to the adjustments and adaptations that are needed in order to survive within the new academic environment. Indeed, this may be at the root of the higher programme dropout rates among freshmen students, as cited in previous retention research (Pantages & Creedon, 1978). In other words, the effects of one poor showing

in a course, especially in the early stages of a degree, may underestimate a student's relative academic strength.

On the other hand, the cGPA can overestimate a student's academic capabilities because it does not take into consideration previous courses that have been dropped. Dropping out of a course does not count towards one's cGPA since no grade is awarded, so students may discontinue the course in order to "save their GPA".

Therefore, a student's previous history of course withdrawal should be considered when measuring their academic integration. Granted, this measure is not useful for students who are new to the university since they have not had as many (or any) opportunities to drop out of their courses. Nevertheless, students who have a history of dropping out of their courses may be doing so to mask their academic shortcomings.

The analysis of a student's history of course withdrawal left no doubts about its impact on attrition. According to the results, a student that has dropped out of at least one course in the past has profoundly increased chances of repeating this behaviour in the online course. In fact, of the students who had previously discontinued a course at Concordia, approximately three-quarters dropped out of their online course. On the other hand, the retention rate among students who had never dropped out of a Concordia course before was 96.2%.

Students who have been at Concordia University for a longer period of time have understandably had more opportunities to drop out of their courses. Therefore it was no revelation that older students, as well as those who have been in their programme for a longer period, had more previous dropouts than younger (and newer) students. These findings also explain why the average amount of DISCs among part-time students was almost triple that of those enrolled on a full-time basis. Moreover, the increased age, part-time status, and weaker academic strength were found to be synonymous with students in the mature entry programme. These students were also found to have a much higher incidence of previous

dropouts than those in the regular and extended credit programmes. This may help explain why their dropout rate was almost double that of the students enrolled in the other programmes.

The survival analysis of this covariate confirmed the disparity in the retention patterns of the students based on their previous history of voluntary academic withdrawal. Students who had never dropped out of a course before (at Concordia) had a different survival function than those who had a history of discontinuing. Moreover, it was also found that students who had dropped out of three or more courses in the past had a unique survival pattern compared to all others.

In this particular analysis, not only was the timing of the withdrawal significant, but so was the sheer magnitude, as demonstrated by the associated hazard function. The highest incidence of voluntary academic withdrawal for students who did not have a history of discontinuing occurred in the last two weeks before the dropout deadline. Students in this category had a retention rate of 99.4% in CHEM 208, 94.0% FINA 200, and 93.4% RELI 216. Their highest hazard rates were experienced in week nine for finance (2.2%), and in week ten for religion (2.5%).

On the other hand, students who had previously dropped out of at least one course experienced their highest number of voluntary withdrawals in the last week of the dropout period as demonstrated with a hazard rate of 35%. All in all, 95.5% of the students from this group who were enrolled in the chemistry course were retained. They experienced their highest hazard rate during week seven.

Students enrolled in FINA 200 who had a previous record of dropping out experienced peak dropout rates in weeks nine ( $p_9 = .492$ ) and ten ( $p_{10} = .556$ ). In fact, there was a 66% chance that a given individual (in this category) would drop out of the course in the last two weeks leading to the deadline. The overall retention rate of this group of students was a paltry 17.4%.

In the religion course, students with a history of discontinuing at Concordia tended to repeat the behaviour during week eight, as demonstrated by a staggering hazard rate of 55.6%. The hazard

rate remained high until the end of the DISC deadline. All in all, three-quarters of the students who had previously dropped out of a course at Concordia and who began the eighth week in the online course dropped out by the DISC deadline, yielding an overall retention rate of 19%.

It was interesting to note that not only did the students differ in their previous dropout behaviour based on certain characteristics, but that those enrolled in the chemistry course were found to have had fewer previous DISCs than those in religion and finance. This accentuates the importance of the demographic differences between the students in the individual courses and their potential impact on retention strategies. Recall that students enrolled in the chemistry course, when compared to the other two courses, tended to be younger, stronger academically, and enrolled full-time in a programme.

There is, however, one caveat with regards to this particular measure. This information was gathered at the end of the semester and included all academic withdrawals that had occurred during that timeframe. If a student had dropped out of their online course, then this value (previous courses dropped) was reduced by one, the assumption being that it would be a better estimate of their status at the beginning of the semester. However, this does not take into account other courses that the student may have dropped during that semester. This was deemed to be an acceptable risk given that the overall attrition rate was fairly low and that the gap between students who persisted and those who did not was large. That being said, replication of this study in the future should measure this value at the onset of the semester in order to avoid inflating its value.

One must also keep in mind that this measure will tend to be higher for students who have been at the university for a longer period of time since they have had more opportunities to withdraw from their courses. One could also argue that a student who has voluntarily dropped out of a course in the past may be more apt to do so in the future simply because they are familiar with the process. New students may not be as aware of the academic deadlines for such actions, or even know that this is an option for them at all.

Despite the shortcomings of these aforementioned measures, they were able to help determine, with some limitations, the student's chances of survival in their online course. Past academic performance, measured with variables such as CRC scores and cGPA, and previous actions, gauged by prior course withdrawal, are important indicators for future actions. Students who have a history of low academic integration, either because of lesser academic performance, or an inability to complete the requirements in courses they have previously taken, are more likely to drop out of their online course. However, it is the history of previous dropout that serves as the most telling sign for future dropout behaviour in online courses.

The bottom line: Students who have previously dropped out of a course (online or other) at Concordia were more likely to repeat this behaviour than those who have never voluntarily discontinued. This was the most telling predictor of future drop out behaviour among all of the data collected, although it is understood that it will have limited practical use for new students to the university. Students who have a history of low academic performance were more likely to drop out of their online course than those who have traditionally done well in their classes. The positive correlations between CRC scores, cGPA, and performance in the course (among those who did not drop out) was a testament to the fact that students who performed well in the past will perform well in the future. But in order to avoid poor performances, weaker students were more likely to voluntarily withdraw from their online course.

### **Previous Experience**

Based on the cost-benefit analysis, Tinto (1993) suggested that an individual's commitment to complete their academic goal will increase the closer they get to that goal. This sentiment was also echoed by Okun et al. (1996) who used investment theory to rationalize that a student who has invested more time at an institution would be more likely to continue there. Similarly, Levy (2007) found that students who were in the initial stages of their degree were more prone to drop out.

It has also been suggested that students with more university experience were more likely to persist in distance education and online courses because they tend to set more realistic levels of expectation (Powell et al., 1990; Diaz, 2002; Dupin-Bryant, 2004). In the context of this dissertation, such suppositions imply that students who were closer to finishing their university degree would be less likely to drop out of their online course.

Almost half of the students who dropped out of their online course had completed less than 30 credits at Concordia, and the students that were in the initial stages of their degree experienced the highest dropout rates. In contrast, students who had completed the greatest amount of credits, meaning that they had completed the major part of their programme, were the least likely to drop out of their online course.

Therefore, for students with little university experience, dropping out may be interpreted as a consequence of a lack of academic integration, and the opposite would be true for those who have completed the majority of their programme. A simpler explanation may be that students who were closer to completing their degree were more motivated and determined to complete it. Furthermore, another interpretation from this finding could be that students who have invested more resources to obtaining their degree were more apt to pursue it to completion.

According to the results presented in the previous chapter, students who persisted in their online course tended to have accumulated more university credits than those who dropped out. On the surface, this seemed to be a noteworthy finding. However, upon closer inspection, one notices that there was only a 5.39 credit difference between the average of one group and the other. Most Concordia courses were worth three credits so the difference was not even the equivalent of two courses. Furthermore, since these values included the courses completed in that current semester, one would expect a difference between the groups of at least three credits since those who persisted (and passed) the online course would have earned them. This simply means that comparing the mean number of credits completed between the two groups does not offer much practical significance for educational administrators.

However, when the credits were grouped into categories, a clear trend in dropout behaviour emerged. In this study, the number of credits was grouped into blocks of 30, which typically represents 10 completed courses at Concordia. By using this technique, it was determined that students who had completed less than 30 credits (i.e., less than 10 courses) had an attrition rate that was triple that of students who had completed 90 or more credits, and double the rate of those with 60 to under 90 credits under their belt.

The survival analysis confirmed that students who had completed the least amount of credits had a different retention pattern than all other students. In particular, the analysis pinpointed week eight as the time when the students in this category were at the highest overall risk of dropping out of their course. However, upon inspecting the individual courses, week nine was the peak dropout period for the students (with less than 30 credits) who were enrolled in the finance course (7.0%), and week eight represented the seminal dropout period for those in the religion course (10.0%).

However, university experience can be measured in different ways. The amount of years that a student has been enrolled in a programme of study may offer a better measure for academic integration than the number of credits completed. The rationale here is that this measure would not favour full-time students who have likely accumulated more credits despite spending less time at the institution. In this case, no difference was found in attrition between students who dropped out and those who persisted based on the average number of years in a programme. But as was the case with the number of credits completed, when students were grouped into one of five categories describing the number of years they had been in their programme, a clearer picture emerged about its effect on dropout behaviour.

Students in their first year of a programme of study had the highest dropout rate among the first four years (13%). This value gradually declined every year until year four when the lowest attrition rate was achieved (9.1%). But the sudden increase in attrition that occurred as of the following year garnered the attention in this portion of the study, as students in this category



dropped out of their course at a rate of 17.9%. The difference between students in the “five years and over” group and those in year four proved to be the only statistically significant difference for this measure.

The survival analysis confirmed this phenomenon. Students in at least their fifth year of study in a particular programme had a different retention pattern than everyone else, with the exception of students in their first year. When attempting to interpret this data, one must keep in mind that students in their first year in a programme were not necessarily freshmen students. They may have accumulated university-level credits elsewhere before transferring to Concordia, or even transferred programmes internally in order to start a new programme from scratch.

Nevertheless, the decreasing attrition rates of the students as of their first year can be interpreted as a sign of increased academic integration. As was seen with the number of credits completed, one would assume that these aforementioned values would increase with each year that a student was in a programme of study, especially if they were studying full-time.

The overall hazard function for the different levels of programme experience showed peaks for *fifth year students in the final two weeks leading to the DISC deadline*, whereas students in their first year in a programme reached their attrition zenith in the final week. When the individual courses were considered, students in FINA 200 generally opted for week nine to drop out of the course, whereas those in religion departed in the eighth week.

The considerable increases in the attrition rates of students who were in at least their fifth year in the programme could not be extrapolated from the previous measures pertaining to university experience. This phenomenon may be explained by the fact that students who take more than the usual three to four years to complete their undergraduate programme of study are more likely to be part-time students. This was demonstrated in the previous chapter with the interaction effect between years in a programme and student status. The proportion of part-

time students gradually increased with each year in the programme, whereas the proportion of full-time students decreased considerably as of year three.

In addition, the steady increase in the cGPA and performance of the students in the course with each added year of experience in their programme could be interpreted as evidence of the increasing academic integration of the individual. The previous chapter demonstrated that the cGPA of students peaked in year four of their programme and dropped dramatically afterwards. Similarly, the CRC scores of students in their third year in the programme were the highest among all students, after which it began to drop every year thereafter. The decline in such values after a certain period of marked increases likely reflected the relative academic weakness of the students who had yet to complete their degree. Furthermore, the initial positive correlation between experience and cGPA could be the result of programme dropout as students who were not performing well at the university decided to cease their studies.

Yet another way to measure academic experience would consider the relative amount of a program that a student has completed. In essence, students who have completed a greater number of credits, and consequently more of their degree, would be more academically integrated than a student who has completed less credits, regardless of the amount of years that they have been in school. This measure differs from the amount of credits completed since it only involves programme students (no independent students), and it only considers the credits that are completed towards the fulfillment of a particular undergraduate degree. However, it downplays the time needed to achieve those credits, thereby levelling the playing field between full-time and part-time learners.

Although a statistically significant difference was found between the amount of a programme completed by students who dropped out when compared to those who persisted in their online course, the values were of little practical significance. More specifically, it was found that on average, students who persisted in their course had completed 9% more of their programme than those who dropped out. As was previously mentioned, this difference would be expected

since students who persisted in their online course and passed it would have been awarded three additional credits, as opposed to those who discontinued.

When students were segregated into five groups based on the percentage completed of their programme (in blocks of 20%), a clearer picture emerged with regards to its effects on attrition. Essentially, students who were closer to completing their degree requirements were less likely to drop out of their online course than those in the initial stages of their programme. The retention rate of students who had completed 80% or more of their degree requirements was just over 92%, whereas those who had completed less than 20% were retained 86% of the time. That being said, the survival analysis was able to pinpoint weeks seven and eight as the most likely period when these students would withdraw from the course. Similarly, students who had completed no more than 40% of their programme also experienced above-average hazard rates in weeks eight and nine.

The peak in the hazard function in week seven among new programme students occurred due to the combination of attrition incidents in all three courses. However, week eight represented the highest hazard rates among the students who were enrolled in the religion course. In addition, the elevated rates the following week were mostly the product of students enrolled in the finance course.

Finally, the other variable used to gauge experience revolved around the medium itself. Dupin-Bryant (2004) suggested that students who had previously completed online courses would be more likely to persist in future ones since they would set more realistic expectations about their experience.

No statistically significant difference was found between the students who dropped out and those who persisted with regards to previous experience in online courses in this study. Although the retention rate of students who had taken at least one online course in the past was slightly higher than that of students with no previous experience, the difference was

minimal. According to the results of the Exit Survey, 41.3% of students responded that they had no previous experience with online courses, meaning that the majority of the students who dropped out had taken at least one previous course online.

The bottom line: The various ways of measuring university experience contributed to the clarification of the effect of academic integration on persistence in online courses. Students who were in the final stages of completing their degree requirements were less likely to withdraw from their course than those who were in the initial stages. However, students who have been at the university for a longer period of time (five or more years) had an increased risk of dropping out of their online course. This is explained, in part, by the part-time vs. full-time differences that have been previously identified. There was no evidence to suggest that students with prior online learning experience had different retention rates than those who were new to the medium.

## **Why are Students Dropping Out of Online Courses?**

The previous section explored the effect of the different demographic variables on student attrition in online courses. These results, obtained from a variety of sources, combined measurements taken from students who persisted, as well as from those who dropped out. The analyses of these results allowed for the isolation of particular traits among students that would indicate their chances of survival in the online course, as well as the timeliness of their actions should they have decided to discontinue.

As was indicated in the review of the literature on retention, although these results can help describe the population and guide research, conclusions that are drawn by these studies are limited. One of the main gaps in this research, and one that cripples any understanding of the reasons leading to the drop out decision, has been a scarcity of data collected directly from the students who are dropping out. In other words, if one is truly to gain insight into the reasons why students have decided to discontinue their online course, they should be asked about it.

That being said, although the Exit Survey provided the crux of the responses to the question “Why do students drop out?”, one should not downplay the information that was collected from other sources about the differences between students who persisted and those who dropped out. Each data collection instrument plays its own role in informing retention research. But neglecting to directly involve the population being studied in the research project is surely counterproductive. Data collected from the other instruments helped answer questions such as “Who is dropping out?” and “When are students dropping out?”, but until that point, no definite answer has been given to “Why do students drop out?”, only speculations.

This section will begin with an analysis of the Exit Survey in an effort to identify the most frequently cited reasons associated to a student’s decision to drop out of their online course. This will be followed by an exploration of the differences in the attitudes, expectations, and motivations of the students who discontinued, compared to the ones who persisted using the other data collection instruments (especially from the WBLQ). This will be followed by the investigation of the individual courses in hopes of explaining the students’ attrition decision in its proper context.

### ***Exit Survey***

First of all, the most obvious reason to drop out of a course, whether it is offered online or not, is to protect one’s grade-point average. Since there are no other benefits to dropping out of a course at that point in time (no tuition refund is offered after the DNE deadline), protecting one’s transcript from the effects of a poor performance was the definitive reason that students will opt for a “DISC”. Dropping out does not affect the cGPA, nor would it hinder future plans (e.g., graduate school) that may have hinged on this performance measure. As predicted, this proved to be the most popular reason cited by students responding to the Exit Survey for their decision to drop out of their online course. However, this aside, there are other reasons that led to this result. Students had expectations of doing well in the course when they first enrolled in it, and for some reason, this expectation had been altered, and consequently, they discontinued the course.

According to the results of the data analyses, the theme that embodied the most popular reasons for voluntarily withdrawing from online courses was poor time management. Whether it was a case of falling behind in their work, an underestimation of the time required, or admitting that they had trouble managing their time, students who dropped out of their online course felt that a lack of time was the most important factor that led to their dropout decision. In addition, one-third of the participants admitted that they procrastinated on getting started in the course, which contributed to their fate.

Also of note was the fact that over half of the students responded that they dropped out of the course in order to concentrate on other (more important) courses. Although it could very well be the case that students discontinued their online course, which was likely an elective, to concentrate on a core course, one must also wonder if the decision had more to do with putting one's efforts where they felt that they had the best chance for the highest grade. Or better yet, that the student opted for the course which would represent a more efficient use of their limited resources. That is, choosing the course where they can achieve the best grade possible with the least amount of effort.

A mismatch in expectations also seemed to be at the vanguard of the reasons for dropping out. In addition to the underestimation in the amount of time, half of the respondents also admitted that the course was more work and that the content was more difficult than they had expected.

Work commitments, unexpected commitments, and personal issues were singled out by one-third of the respondents, and family commitments accounted for about 20% of the withdrawals. Moreover, one-third of the students acknowledged that a poor performance on an assessment influenced their decision.

All in all, the results of the survey questions indicated that the vast majority of the factors cited by the students as the reasons for their decision to voluntarily withdraw from the online course were within their control. In other words, according to the barriers of persistence identified by

Garland (1993), the majority of the causes of attrition among the students responding to the Exit Survey could be classified as being dispositional and epistemological barriers. More precisely, of the top ten most popular reasons cited by the students, dispositional barriers consisted of the top six, and epistemological barriers represented positions seven and eight.

The most popular situational barrier blamed by students as the reason for their withdrawal was work commitments (37%), whereas the top institutional barrier involved a lack of clarity in the course requirements (43%). Factors that fell into these categories did not figure as prominently in the results.

It has been suggested that factors beyond the control of the institution will have increased influence on the persistence of students attending commuter colleges (Braxton et al., 2000). In addition, Garland (1993) identified the primary causes of attrition as being situational or dispositional barriers. The results of this study, although similar to the previous findings, put more emphasis on the dispositional barriers, and less on the ones classified as situational.

This could be a factor of the nature of the students involved in this study, who were younger and had less external influences than the ones in Garland's (1993) study. In addition, dispositional barriers were represented in more questions on the Exit Survey than any others, which may have played a role in the final results. Nevertheless, these barriers had to be pinpointed by the students who dropped out in order to be considered a factor.

A common point between these studies was the fact that institutional barriers did not seem to be a major factor in the attrition of the students, hinting that perhaps the role of the institution in curtailing this phenomenon is indeed a secondary one.

In the last part of the Exit Survey, the use of open-ended questions allowed students to elaborate on the reasons for their voluntary withdrawal from the online course. In most cases, they took advantage of the situation by citing multiple causes. However, for the purposes of this

portion of the survey, a maximum of three causes were recorded and coded according to Garland's (1993) barriers of persistence in distance education.

The most important aspect of the results of this portion of the Exit Survey was the fact that unlike the previous section, the most popular reasons cited by the students for dropping out of their online course were classified as being institutional barriers. In fact, of the primary barriers identified by the students, approximately 40% were classified as being institutional. Moreover, in regards to the initial blame for dropping out of the online course, one-third of the students who dropped out pinpointed the institution as the root cause. This is a far cry from the previous results where institutional barriers did not seem to play much of a role in student attrition.

The contrasting results could be attributed to a failure in previous studies to identify the actual underlying reasons at the root of student withdrawal that only open-ended questions could unearth. For example, a student cited "underestimated time" as a reason for dropping out of their online course, which would normally be categorized as a dispositional barrier of persistence. However, when allowed to elaborate, the student said the following:

- *"Tell us ahead of time what is expected from us. The outline was vague to explain what was meant by a Think piece. It sounded like a weekly response assignment, not two 2000 word papers near a midterm and final for an intro class and the announcement was AFTER the drop date."*

Granted, the student misjudged the amount of work that they needed to do for the course, but this was due to a vague course outline, a misrepresentation of the assessments, and poor organization. In other words, the underlying reasons for withdrawing in this case were within the sphere of influence of the educational institution.

The following is a closer look at the individual barriers to persistence in the online course, as identified by students responding to the Exit Survey. This is not a comprehensive list since multiple responses were isolated from that survey. Rather, it represents a more detailed picture



of the influence of certain of the most popular factors on persistence, as well as offers some additional explanations using the results of the other instruments.

## **Institutional Barriers**

The institutional barriers that were identified by the students represented issues that were within the sphere of influence of the educational institution. These factors represented the most popular category among the four barriers proposed by Garland (1993), and as such, it suggests that the institution can play a major role in influencing its own retention rates.

### **Lack of Communication/Feedback**

The most popular reason cited by the students as the cause for dropping out of their online course was a lack of communication and/or feedback in the course. This may have included a lack of timely feedback from the instructional team, unhelpful responses, or unanswered questions, all culminating in a general sense of frustration from a lack of student support.

A lack of timely feedback was also cited as a cause for dropping out in the earlier portion of the Exit Survey, but it was not found to be as significant as the other measures. Therefore, the open-ended portion of the survey allowed for the discovery of its true effect on the dropout decision.

A primary advantage of the face-to-face classroom setting is the instantaneous feedback on questions and clarifications regarding anything from the content of the course to the breakdown of the final exam. Responses to these questions often serve to alleviate student concerns and fears, further enhance their comprehension of the course materials, and update their expectations about the course. In online environments, especially in the case of asynchronous Web-based courses, students rely almost uniquely on computer-mediated communication to get their answers (i.e., e-mail, course Website, class discussion board).

Therefore, if the communication was not clear and prompt, especially in times of higher stress (e.g., near an assessment deadline), students will become increasingly frustrated and be more

likely to drop out of the course. In many cases, communicating by e-mail, or posting messages on the discussion board was the only lifeline between the student and the class, and a failure to provide adequate feedback and opportunities for communication was a major cause of attrition in online courses.

This lack of communication could very well be at the source of the feelings of isolation that have been rampant among distance learners (Dickey, 2004). In this study, for instance, it was found that a higher proportion of students who persisted felt as though they were part of the class than those who dropped out. However, these feelings of isolation did not seem to be a main reason for withdrawing from the online course since the expectations for communication with the instructors, and especially with fellow students, were quite low to begin with. They barely registered among the individual reasons cited by the students who responded to the open-ended portion of the Exit Survey.

This particular factor was classified as being an institutional barrier since the students blamed the breakdown in communication on the members of the instructional team and the support services. For example, students commented:

- *"0 feedback from TA's and prof. When students asked questions, we received non answers and rude comments such as "you are in university now, you should not be asking questions" when the question was to clarify are very vague exam question".*
- *"I had important questions regarding the outline and assignments. I sent emails to the T.A. and the teacher and did not receive any reply, at all, nothing. I also forfeited my one class payment because I waited for a reply and missed the drop deadline so I was forced DISC the course".*

### **Dissatisfaction with Assessments**

Dissatisfaction with the assessments in the course brings together a number of different factors including those that relate to the flexibility (or lack) of deadlines, the weighting of the

assessments (not worth enough or worth too much), the number of assessments (usually too many), and the types of assessments (essays, multiple-choice tests, term projects). It does not relate to the performance of the students on said assessments, therefore this measure has been classified as being an institutional barrier.

An instructor may argue that in many cases, the information about the assignments was presented in the course outline. But despite the fact that students had benefited from a trial period in which they had time to try-out the course, for some reason, the students' expectations with regards to the assessments did not match with their actual experience.

Perhaps a more pertinent example of the role that an institution can play in the management of the expectations of its students was witnessed in the religion course. Students dropped out of the course en masse as soon as the mid-term project was posted. The students were well aware of the fact that the mid-term was forthcoming, knew that it would be worth 40% of their final grade, and they had a certain idea as to what to expect, but this was based on a mere three sentences in the course outline:

- *"The mid-term exam will consist of essay questions. This exam will be posted on the course website on the date indicated in the Weekly Planner. Students will have a week to answer the questions and submit their answers online."*

Based on this description, students expected essay questions, a take-home exam, and a full week to complete it. It should also be added that a discussion board posting by a teaching assistant responding to a panicked query clarified that there would be three questions. However, once the mid-term questions were posted, students ascertained the complexity of the questions, and in doing so, revised their expectations regarding the amount of work that would be involved in answering them. Needless to say, for many of the students there was a significant gap between their budgeted work schedule for the course, and the actual effort that would be involved in completing this exam. As one student mentioned in the Exit Survey, "...it was like an

*atomic bomb had been dropped on me*". They were not prepared to make the necessary adjustments in order to conform to the requirements for the mid-term, and subsequently decided to protect their GPA by dropping out.

Specific reasons pointed out by the students for withdrawing from RELI 216 included:

- *"many frequent tedious assignments that were worth little"*.
- *"size of the essays, and too little time between assignment distribution and due date"*.
- *"I have two friends who were also taking this course with me and they both dropped it after the assignment date because the assignment required too much research in exchange of only 10 points and the participation grades we were given were very low. It was very discouraging"*.

#### **Lack of Procedural Information**

This category encompasses issues that have to do with a perceived lack of information pertaining to getting started with the course (e.g., obtaining an account), who to contact for particular questions and problems, and where to obtain required course materials. These are issues that are all within the sphere of influence of the educational institution offering the online course, and therefore, have been classified as an institutional barrier.

Some will argue that much of the information demanded by the students (e.g., where/how to buy the textbook, how to participate on the discussion board, how to purchase an account) is contained in the course outline. However, even if this is indeed the case, it does not necessarily follow that the students read the course outline thoroughly or that they could easily find information when they needed it (for instance, the course outline for RELI 216 consisted of 11 pages).

In a classroom environment, course outlines are typically handed out during the first class and the instructor will usually spend a portion of that class going through the outline with the students. This is an opportunity for the learners to ask questions and seek clarifications about particular items contained (or not) in the course outline. Furthermore, the professors are available in person for follow-up questions throughout the semester.

In online courses, however, the course outline is either e-mailed to the students at the onset of the course, or students are expected to download it for themselves from the course website. In either case, there is no way to ascertain that every student has received the information they need. In addition, if the outline is e-mailed to students, there is a possibility that such a mass e-mail will be filtered by anti-spam software and moved to their junk mail, or they may not receive it at all (in the case of students who registered late). This was demonstrated by one particular student who wrote:

- *"I had no idea what was going on. I saw some course material on the Moodle website (at first), so i though it would be there. After the mid-term i got an email telling me that i had to sign in eConcordia".*

Another indication of the fact that the students were not receiving the information they needed was demonstrated with the Exit Survey as it pertained to the orientation session. According to the results, 40.1% of the respondents claimed that they did not view or attend the orientation session (if a face-to-face version existed), which included 15.7% who did not even know about it. In addition, less than half of the students who responded to the survey had watched or attended the session and had found it of use, and 20% responded that they did not know who to contact for help.

All in all, although some of the institutional barriers listed can be influenced by the instructor or instructional team, others may be the responsibility of the administration, the instructional designers, or student services. In other words, not only can the institution play a role in making

changes to curtail attrition, but there are several stakeholders within the institution itself that can get involved depending on the nature of the problem. Due to the scope of the various institutional factors, it may not be prudent to group all of them under the same “institutional” banner. Rather, it would make more sense to further segregate this category such that it can better represent the key roles that various departments within the educational institution can play.

## **Dispositional Barriers**

Among the reasons that were cited by the students for dropping out of their online course, the factors that fall into this category represent issues that are within their control. Although students put the blame on these reasons for their departure, their fate could have been altered had they decided to make the necessary efforts.

### **Lack of Time Management Skills**

One of the principal factors identified in the Exit Survey as a reason for dropping out of the course was related to time-management. Whether it was because they fell behind and could not catch up, they underestimated the amount of time the course would take, or they had trouble managing their time, each of these factors figured prominently among the students who discontinued their online course.

A lack of time management skills was a very popular response to the open-ended questions in the Exit Survey. The advantage of the use of the open-ended questions became obvious during the coding process as the “did not have enough time” excuse could be further dissected to identify its underlying cause. In some cases “did not have enough time” translated into work or family commitments, but in others cases, students were simply unable to handle their course load, procrastinated, lacked self-discipline, or had a mismatch in the expected time needed to complete the online course. Consequently, these factors were mostly classified as dispositional barriers (if it was due to poor time-management) and others as situational (if it was the result of other commitments).

Many of the students enrolled in the online course in order to maximize the flexibility in their schedules, but they lacked the self-discipline needed to persist in a course where the onus of the pacing of the instruction was on their shoulders. In some cases, the added time required on their part simply caught them off-guard. Some of the students did not realize that they were responsible for making up the time that they would be in a classroom in addition to the work they would have to complete on their own. They were used to the instructor lecturing and recounting what they would need to read and research after class. They did not necessarily realize that this lecturing time needed to be replaced in asynchronous online courses. Although some course Websites made use of mini-lecture videos, presented condensed lecture notes, and provided useful links, the majority of courses also expected students to compensate via additional readings. It proved to be difficult to find (or make) the time needed to complete the work.

According to the results of the WBLQ, a significantly larger proportion of students who dropped out admitted that they were having trouble finding the time to devote to their online course. Although this was not a revelation on its own, it was pertinent when matched with a previous measure regarding one's expectations about having the time to devote to the course. In particular, three-quarters of the students who were experiencing trouble devoting time to the course and eventually dropped out had expected to have ample time to allocate to it. This meant that there was a mismatch in the student's expectations with regards to the time they would need for the online course. It is interesting to note that among the students who persisted, 28% expressed difficulties in finding time for their online course despite their positive expectations.

Time also played a significant role in another factor as students who dropped out had responded more negatively to the statement "This course is taking less time than other classroom courses I am currently taking (or have taken in the past)". Hence the online course was felt to be less time-consuming for students who persisted in it when compared with those

who eventually withdrew. Students who cited time management problems as the grounds for their withdrawal included the following comments:

- *"I would pace myself. I would not start with a bang (like I usually do at the beginning of the semester; followed by a huge period of procrastination)".*
- *"Not accepting late registrations, because I registered late and I was really behind".*
- *"I didn't begin my course readings until just before the first assignment was due. As a result, I didn't complete the assignment on time (rather, at all), and later didn't get the midterm done on the assigned day. Ultimately, I was too far behind in my readings to catch up on my assignments/exams quickly, nor did I have the time to dedicate to the task of 'catching up' due to my full-time job. If I hadn't dropped the class, I probably would have failed it, or at best I would have passed with a less than satisfactory grade".*

### **Lack of Motivation**

A lack of motivation ranked among the most frequent factors blamed by students for voluntarily withdrawing from their online course. Feelings of academic inadequacy, oftentimes due to poor performance on an assessment, coupled with low confidence levels, were at the root of the lack of motivation in pursuing the course. In other cases, students simply did not start the course because of the amount of work that was required, or felt overwhelmed by the effort they would need to invest in order to perform well on a given assignment or assessment.

A lull in motivation due to one's poor performance on an assessment was an issue that had previously been identified while analyzing the data gathered from the WBLQ. According to the results, a higher proportion of students who dropped out had suggested that they would discontinue the course if they underperformed on their first assessment. The lack of confidence, whether in the choice of the course, or in one's academic abilities, could be evidence of student's low self-efficacy.

There was a major disparity in expected performance between the students who dropped out and those who continued in their online course. Students who eventually dropped out had



scored lower on the measure for expected performance in the course, and scored higher in agreeing that they would likely drop out if they did not perform well on their first assessment. A lack of confidence in one's potential performance, or in one's capability of recovering from a poor performance, was more likely to result in dropping out of the online course. This notion supports Bean and Eaton (2000) who suggested that students with high self-efficacy will be more likely to persist in their course because they have confidence to make any necessary adjustments to their study habits.

Confidence, whether it was in their academic abilities, their ability to adapt, their long-term career plans, or in their choice of course, has an influence on the dropout behaviour of the students. Confident individuals will be more likely to persist in their online course than those who are not. This finding is supported in the literature where it is suggested that students who are confident in their academic and professional choices are more likely to be motivated to persist in their studies, especially if they feel as though the experience is related to the achievement of that goal (Meyer, 1970; Nelson, 1972).

Keller (1987) proposed that the fear of failure is often much stronger in students than instructors realize, and for students with low self-efficacy, a poor performance on their part would have devastating effects on their chances of pursuing in their studies. However, as demonstrated by the relatively high predicted performance in the course by students who dropped out of it, it is more likely that the fear of a poor performance, rather than the fear of failure, is at the root of the higher attrition rates following a poor result on an assessment. This factor may be amplified in cases where the course serves as an elective for the student. This fact was demonstrated in a few student comments, including:

- *"I didn't do well on an assignment/quiz...I rather have lost my money than gotten a bad grade".*
- *"When I thought I did fairly well on my midterm and failed".*
- *"I tried to do well in the first assignment, but did not and therefore dropped the class".*

As suggested by Tinto (1975) and demonstrated by the results of the weekly surveys, student motivation levels fluctuated throughout the semester. Although they were affected by perceived performance in the course, they were also influenced by upcoming deadlines, communication (or lack thereof) with the instructional team and fellow classmates, and overall satisfaction with the learning experience.

Although a lack of motivation was categorized as being a dispositional barrier, in some cases the students elaborated that their low motivation levels were due to a lack of interactivity in the course design, or simply an unappealing and uninspired Website. In those cases the institution is liable for the departed student. Hence, this situation would be categorized as the institutional barrier “poor instructional design”.

### **Concentrate on other Courses**

Over half of the students who responded to the Exit Survey admitted that they gave up on their online course in order to concentrate on other “more important courses” (56.4%). An economist would call this type of decision an “opportunity-cost” since one option is being sacrificed for another. In this case, the time and money that has already been spent on a course is sacrificed in order to focus on another course. Kember (1989) would likely associate this type of conclusion as a product of the student’s cost-benefit analysis.

In the open-ended portion of the Exit Survey one student explained their decision to leave the course as follows:

- *“I was getting behind in my other courses and this course was an elective”, “I had enrolled in 5 classes (including the online one) and I found it difficult to keep up and focus on all of them equally. I put aside the online class and invested most of my time on the other courses (which are part of my program). And I eventually fell behind.”*

Since the online courses usually served as an elective course for students, one would expect that it would take a backseat to courses that are required (core courses) in order to complete a

programme. However, it was found that some students were enrolling in the online course as their fifth course in order to try a semester with a maximal course load, something they had never attempted before. It was felt that by adding an online course to a schedule that was already comprised of four face-to-face classes would be easier than taking five “real classes”.

The results of the WBLQ also hinted that this may also be a possibility for students who would usually enrol in one course and were using an additional online course as a means to increase their course load. For others, concentrating on other classes simply meant focusing their energy on a course where they believed they had the highest probability of success (i.e., highest grade).

Although some students claimed that they needed to concentrate on other (more important) courses, another possibility is that this reflects a lack of time management skills (i.e., procrastinated with the course) or a mismatch in their expectations of the work needed in the online course. This could prove to be an important factor for students who are attempting to take on a heavier load of courses than they are used to managing.

### **Incompatible Learning Style**

Some students blamed a divergence between the medium and their study habits as the reason why they dropped out of the online course. For most individuals, especially among those experiencing their first online course, the medium of instruction represents a radical shift in their study habits. In essence, the control of their instruction has moved from the instructor to their own hands. This shift may be described as one towards “self-directed” learning (Moore & Kearsley, 1996). Some students were simply not prepared to make that shift, or did not quite know how to go about it. When describing these learners, Rossett and Schaefer (2003) observed that they were, “under-prepared people with lifelong habits cultivated in classrooms dominated by instructors”.

This factor has been classified as a dispositional barrier since the bulk of the problem lies with the learners’ inability to adapt to a new learning environment. That being said, one must point

out that the students came to this conclusion after the “trial” period had expired (DNE deadline) when dropping out would not have incurred a penalty. In other words, despite the fact that they had ample time to determine if the medium of instruction was conducive to their instruction, they were unable to identify problems that would lead to their eventual withdrawal.

Lindsay et al. (2005) suggest that students will often enrol in the course thinking that it is easier because it is offered online, yet when they realize that they have underestimated the amount of work that is required, they end up blaming the medium of instruction. For example, students cited an incompatibility of learning styles as a reason for dropping out, but when allowed to elaborate, the issue was not necessarily the medium of instruction, but rather a lack of self-discipline that led to time-management problems.

However, in other instances, students were adamant about the fact that they missed the personal interaction, the ability to receive immediate feedback, and the social atmosphere of face-to-face classrooms. One student commented that they decided to drop out because of a *“lack of human presence. I do much better in a real classroom with real professors...”*

All in all, dispositional barriers to online learning embody factors that can be influenced by the students by making a concentrated effort to alter their own behaviours and/or attitudes. Some may also argue that the institution can have some influence on these factors, and that oftentimes, the responsibilities are shared between the individual and the educational institution. Nonetheless, these issues reside with the learner as they are ultimately responsible for changing them.

### **Situational Barriers**

Although the factors listed in this category are the responsibility of the learners, unlike dispositional barriers, they have limited or no control on them. Many of these issues stem from outside the academic setting, but nonetheless influence the limited resources that students have at their disposal to devote to their studies.

Increased stresses at work, at home, as well as unexpected personal problems (illness or disability) were identified as some of the main reasons why students will drop out of an online course (Simpson, 2003; Bleed, 2005).

### **Life Commitments**

As stipulated in the surveys, the greater part of the student body have some sort of work commitment, be it on a part-time or on a full-time basis. Although it was not immediately clear from the WBLQ how this affected one's persistence in the course, one-third of those who responded to the Exit Survey blamed their work commitments as being a main factor in their decision to voluntarily withdraw. In addition, approximately the same proportion of students cited personal problems or unexpected commitments, and 20% claimed that family commitments were at the root of their dropout decision. These factors are categorized as situational barriers to persistence.

The results of the Exit Survey made it clear that work commitments played a major role in influencing enrolment and retention in online courses. Over 40% of the respondents cited work commitments as a factor in their decision to enrol in the online course, and there was a positive and relatively high correlation between the hours worked by a student and the self-reported influence of work commitments on their decision to take an online course. A similar positive correlation was identified between hours worked and the blaming of work commitments for dropping out of the online course. In fact, almost two-thirds of the respondents who enrolled in the Web-based course because of work commitments dropped out for the same reasons.

Although they were segregated from work-related factors, family commitments were also seen in the same light. Among the students who answered the WBLQ, it was found that a significant proportion of women who had enrolled in an online course because of family commitments had eventually dropped out of it. The relationship between enrolling and dropping out for the same reasons was further reinforced with the Exit Survey. It was found that 42% of the students who enrolled in the online course because of family commitments dropped out for the same reason.

It can therefore be concluded that if a student enrolled in the online course because of work or family-related commitments, there was a high likelihood that they would drop out for the same reason.

In some cases, a change in a student's work/family status was at the root of the decision to drop out. The additional stress caused by an increase in work hours or by the unexpected illness of a dependent shifted the balance and importance of certain commitments and ultimately led to the decision to drop out of the course. It could be argued that this is a case of poor time management skills or an inability to adapt, but the reality is that in some cases, these changes simply cannot be predicted and other commitments must take priority. The following are some of the many examples from this category:

- *"I had an unexpected business trip. Since my trip was intense, and I didn't have time to access to the course or to do any research for my studies, I couldn't finish the assignments by the deadline".*
- *"I found it difficult with a new son to take an online course".*
- *"I was unable to pursue the course in the first 2-3 weeks of classes due to the illness and death of my grandmother. I was directly taking care of her".*

Situational barriers would therefore represent personal factors that are the least likely to be influenced by the institution. In fact, they are also likely the most difficult for the learners to control as they can be unpredictable, life-altering, and will oftentimes take priority over academics.

## **Epistemological Barriers**

This group of factors represents barriers that prevent the learner from achieving their academic goals despite their volition to do so. These obstacles typically represent a mismatch in the expectations and/or capabilities of the learner.

### **Content too Difficult/Lack of Prerequisite Knowledge**

The difficulty of the course content, either because of its complexity, or because the student felt that they lacked the prerequisite knowledge needed to understand it, was a popular reason for dropping the online course identified by the students responding to the Exit Survey. Since the problem resided with the student, this factor was categorized as an epistemological barrier to persistence.

The fact that the online courses were 200-level introductory courses that did not require prerequisites implies that the content presented in the course should be suitable for any undergraduate university student. However, according to the students, some courses included concepts that were too complex or too frustrating to learn, and this was the justification they used to drop out.

Certain students commented on the difficulty of the course materials and/or their lack of prerequisite knowledge:

- *"The readings were beyond the intro level to a course. It seemed as if I was supposed to know a lot about the topic before hand and I found the readings somewhat difficult considering it is a 200-level course".*
- *"...it demanded an understanding of political systems that I have not been introduced to growing up in another country especially the political history of Quebec which I am not familiar with".*

That being said, one must wonder why it took the students over three weeks to come to the realization that the content was so difficult that it got to the point where they had to drop out of the course. Was the instructional design of the course masking the complexity of the content until after the DNE deadline had passed? Were there certain sections of the course that proved to be more difficult than others? Or perhaps the students waited too long to get started with the course and did not properly ascertain the difficulty of the content, or the amount of work needed on their behalf. Then again, in some cases, students cited that the course was "too

difficult”, when in reality they had fallen behind because of poor time management and study habits and found it “too difficult” to get caught up.

### **Mismatch in Expectations**

The responses gathered from the WBLQ and the Exit Survey pointed to a mismatch in expectations as one of the key reasons that students voluntarily withdrew from their online course. For instance, students responding to the Exit Survey attributed a significant amount of weight to the fact that they had underestimated the amount of time the course would take. They had not expected so much work in the course, and found the content was more difficult than they had expected.

Expectations about the course are set by the student the moment they enrol in it. The WBLQ identified several different expectations that students had with regards to the course, the most popular being the flexibility that it would provide in their scheduling and the amount of time they would have to devote to the course. However, differences in the expectations of the students were also found between those who persisted and those who dropped out. Students who dropped out had scored higher than persisters in their expectations that the course would be easier because it was online. However, they scored lower in their expectations on whether or not they would have problems adapting to the self-pacing environment, as well as in their expectations of communications with fellow students.

One of the possible causes of this mismatch in the expectations may be traced to the Exit Survey. As was previously mentioned, more than half of the students who responded to the Exit Survey may not have received pertinent information to get them started in their course, thereby adding to the obstacles that had to be overcome to succeed. This may explain why a large proportion of the respondents claimed that they were unclear as to what was required from them to succeed in the course (43%).



That being said, the responsibility for obtaining this information is shared. The student must make an effort to obtain it, and the institution must make it available in a clear and concise manner that allows students to find the information they need in a timely manner.

Ultimately, students who dropped out of their course were more likely to have done so because their experience had turned out to be something they had not predicted and as a result, they were no longer willing or prepared to make the necessary adjustments or invest the required energy. A student responding to the Exit Survey commented about their mismatch in expectations as it pertained to the course materials:

- *"I underestimated how much time reading the many chapters, going over the study notes & watching the lectures would take. I would devoted more time to my studies."*
- *"The amount of work required far exceeded my anticipations and with competing responsibilities and course loads from my 4 other courses I felt it was impossible to do well."*

The open-ended portion of the Exit Survey identified a mismatch in expectations as being an epistemological barrier since the blame for dropping out was placed on the student's own shoulders as opposed to the institution. This category differed from the institutional barrier of "misrepresentation of services". However, this in no way invalidates the influence that an institution can have in helping students establish their expectations about the course.

On the contrary, this category probably represents factors whose responsibility should be shared between the individual and the institution. As was previously suggested, the expectations of the students enrolling in the online course rely heavily on the information provided to them by the institution. If the institution does not present this information in a clear and concise manner, there will be a large gap between the expectations of the students and the reality of the experience, thereby increasing the chances of the learners dropping out due to the stress caused by this revelation. Where the mismatch in expectations is pinned on the student

according to Garland's (1993) barriers, the lack of procedural information about the course, on the other hand, would be the responsibility of the institution.

## **Other Barriers**

The responses to the Exit Survey allowed for the collection of attitudinal and behavioural data that directly influenced the dropout decision of the students. However, the analyses of the WBLQ, the registration data, the grade sheets, and the weekly surveys also provided key insight about the reasons why certain students decided to abandon the online course, while others persisted.

It is important to note that when making comparisons using data from the WBLQ, it was quite possible that additional differences were being masked because of the relatively low dropout rate among the respondents. It has already been established that participants in this survey did not reflect the actual attrition rate of the students enrolled in online courses that semester, and therefore, generalizations should be made accordingly. The following section explores additional reasons why students may decide to drop out of or persist in their online courses based on the other sources of data in this research.

## **Financial Burden**

There was no evidence to suggest that a student's perceived financial burden was a determining factor in their decision to persist or drop out of their online course. In fact, of the students who responded in the WBLQ that attending university put them in a significant financial strain, over 95% were retained. This finding seems to agree with Tinto's (1993) suggestion that finances may have more of an effect on the student's decision to initiate their studies in higher education rather than to continue once they have begun.

Again, the context of the research setting must be considered in this measure. Students attending Concordia University, especially those from the province of Québec, enjoy some of the lowest tuition rates in North America. Also, the fact that this is mostly a commuter

institution in an urban setting would imply that many of the students may still be living at home and would not have to worry about the additional costs associated with more residential universities. In addition, financial aid and other university initiatives to help students in financial need may play a positive role in their retention.

One must also consider that the research setting involves a single course and not an entire programme, as has been the case in the majority of previous retention studies. The costs associated with dropping out of a single course are much less imposing than those related to abandoning an entire programme of study, especially if the associated tuition is forfeited. Therefore, perhaps finances would be more influential in the case of program retention and at an institution where the cost of attending is much higher, such as at a residential university.

In effect, according to the information collected from the Exit Surveys, one of the reasons that students dropped out of their online courses was because they could afford to do so. They may have dropped out because of prior work commitments or changes in their work schedule, but they were not leaving school in order to start working due to financial stress. Rather it was the lack of financial burden, especially among male students with more educated mothers, which gave some students the luxury of being able to drop out of their course to protect their grade-point average. As one student declared during the Exit Survey:

- *“I would rather pay a couple of hundred bucks for a course I could not finish rather than doing poorly, and having it affect my GPA”.*

In fact, the low tuition rate at Concordia University may explain why 88 students in the three courses being investigated had previously dropped out of three or more courses, including one particular student who voluntarily withdrew from 17 of them.

## **Family Background**

Spady's (1971) theory that students with more educated parents were more likely to persist in their studies was not supported in this study. In fact, there was evidence to suggest the opposite effect. In other words, students with more educated parents, particularly male students with highly-educated mothers, were more likely to drop out of their online course.

One possible explanation for this is the fact that students whose parents are well educated were more likely to come from a higher socio-economic class. Therefore, they were not as likely to be financially burdened or feel the financial stress of education as were students who have to pay for their own education. These students can more easily afford to drop out of their courses if they felt that their performance (cGPA) may be hindered.

In addition, students whose parents are less educated may be more likely to persist in their studies because they were motivated to become the first in their families to obtain a university degree. This notion surfaced, among other places, in the course evaluation, where a student recounted the fact that her parents, who immigrated to Canada, had never graduated from high school and that this was added motivation for her to complete her university degree.

This being said, Spady's (1971) finding was based on students being retained in their program of study. Perhaps the level of education of the parents is still pertinent in influencing one's academic goals (i.e., obtaining a university degree), but it did not seem to display the same relationship with regards to persistence in the individual online courses in this study. Instead, the parent's education, as a measure of socio-economic status, seemed to have a negative effect on the student's persistence since they could afford to protect their GPA by dropping out of their course.

## **Ability to Change**

A high proportion of students who dropped out of their online course had also expressed a need to change their study habits. Although the fact that they dropped out of the course did not

necessarily mean that they were unsuccessful at changing their study habits, it does bring into question their ability to adapt to the learning environment. Adapting one's study habits, much like confidence in adapting to the self-pacing of online courses, can be seen as a requirement needed to conform to the norms and expectations of the learning environment. The acquisition of new computer skills, for example, proved to be an adaptation that had to be made by students who have never taken an online course before, as well as for those who were new to the university.

This is akin to Van Gennep's (1960) transition phase, except here, instead of adapting to the norms of a society, the student is adapting to the requirements needed to survive in online courses. Chickering and Reiser (1993) suggested that students must be willing to make the necessary social and academic adjustments in order to survive in a new environment. As was demonstrated in the previous chapter, this was especially the case for first-time online learners and for students with no prior university experience as they tended to have to make more changes to their study habits than those with prior experience. However, students who dropped out of the online course had expressed less confidence in their ability to adapt to the self-pacing environment of online courses, as well as in their computer skills.

### **Intentions of Dropping Out**

The largest difference that was found among the attitudes and experiences of the students regarding their online course related to their initial feelings about dropping out of it. On the whole, students who indicated that they had no intention of discontinuing their course at that point in time did not, and of those who were considering dropping out, a large proportion eventually did.

According to the results of the WBLQ, a considerable number of students who dropped out of the online course were already considering this action when they responded to the survey. This was especially the case for part-time or female students as the majority who responded that they were strongly considering dropping the course eventually did so. The lack of such a

distinction among the male students may be a function of the small number who dropped out all-together. The gap between full-time and part-time students may be a sign that students who were enrolled in more courses (and possibly have less non-academic responsibilities) have more opportunities to change or adapt to their situation.

These findings support the claim of the attitude-intent-behaviour causal sequence, as proposed by Fishbein and Ajzen (1975). If a student expresses the intent to drop out of their course then they are more likely to do so (Okun, Ruehlman, & Karoly, 1991). Likewise, the intent to drop out based on one's early performance in the course serves as a precursor for future actions on behalf of the learner. One could also argue that this phenomenon is reflective of a student's fear of failure, an issue that Keller (1987) claims is much stronger than instructors realize, and that Garland (1993) identifies as a major cause of attrition.

Fishbein and Ajzen's (1975) proposed attitude-intent-behaviour causal sequence is also prevalent in the prior behaviour of students, especially as it pertains to previous DISCs on their record. The retention rate of students in the online courses who have never previously dropped out of a course at Concordia was 96.2%. This figure drops dramatically to 30.6% if they have previously dropped out of a single course, and decreases even more so if they have dropped out of three or more courses in the past (19.3%).

## ***Courses***

Now that the individual factors have been analyzed and discussed and that a clearer picture has emerged regarding who is dropping out, why they are likely doing it, and when this is most likely to occur, the context provided by the individual courses must be considered.

According to the overall survivor and hazard function it was clear that the majority of the students who discontinued their online course took action during the final weeks leading to the dropout deadline. Of particular interest is the sudden spike in the hazard rate that occurred during the eighth week of the semester when the value doubled that of the previous week.

However, before one can make any generalizations about the causes of this pattern, several issues must be considered.

Despite the fact that this demonstrated the overall retention of the online courses, it was very much a proportional model as it combined the results of three courses in such a way that large enrolment numbers would contribute more to the overall trend than a course with fewer students. Moreover, the overall pattern also included various levels of different variables that were oftentimes disproportionately segregated, subsequently masking their possible effects.

For instance, it has been proven through previous analyses that a higher proportion of students enrolled in the mature entry programme dropped out, however these students made up only 8.5% of the total enrolment in these online courses, so their influence on the overall survival rate may not be obvious. As well, the individual courses themselves contributed various possible confounding variables that could influence the overall retention pattern. This could include the differences in the subject matter, their instructional design, the dropout rates, and even their composition of its constituents, as previously demonstrated in the analysis of the demographics of the students enrolling in the individual courses.

The literature suggests that the difficulty of the subject matter had an effect on the persistence of the students in the course (Bernard & Amundsen, 1989; Astin, 1997). In Astin's (1997) study, students in business and social science courses had better retention rates than those in engineering. It was suggested that the higher attrition rate in the engineering course was the result of the more difficult subject matter. Based on this assumption, one would expect that the chemistry course should have a lower retention rate than the finance and religion courses. However, as demonstrated with the registration results, the chemistry course had a retention rate that not only surpassed the other two courses, but proved to be the highest among all online courses offered that semester.

One likely explanation is that the chemistry course, although arguably a more difficult subject per se, was designed for non-science students, and subsequently, was found to be easy for any student who had recent experience with a chemistry course before coming to university. After all, the performance of students enrolled in the course far surpassed that of the other courses.

Another possible explanation may lie in the nature of the students who were enrolled in these courses, and not necessarily in the content matter itself. For example, as explained earlier in this chapter, the majority of the individuals who registered for the chemistry course were young full-time students who were relatively strong academically (high CRC and cGPA scores). In contrast, students in the finance course were mostly male, older, and were enrolled on a part-time basis in a significantly greater proportion when compared to the two other courses. In the religion course, two-thirds of the students were female, and most of them were enrolled full-time in a programme in the faculty of Arts and Science.

The fact is that the chemistry course seemed to be comprised of stronger students, as demonstrated by the high performance scores of the students, as well as by their cGPA and CRC scores. In addition, a vast majority of the students had never dropped out of a course before, and many were enrolled in the JMSB, which has higher entry standards than most programmes at the university. On the other hand, students in the finance and religion courses were weaker academically, had a higher proportion of mature students (double that of chemistry), were older, had more part-time students, and had more students who had previously dropped out of a course.

However, the demographic information alone is not enough to explain why the students dropped out. For instance, each course employed different assessment strategies, due dates, marking schemes, instructional design, teaching assistants, and numerous other possible confounding variables. In addition, there were particular times during the semester when, according to the results of the survival analysis, students were more likely to drop out than others. What other factors were at play?



Since it has been shown that the three courses being investigated in this study differed in several areas (e.g., subject matter, retention rate, student demographics, and assessment strategy), it is essential that the individual courses be investigated separately in order to pinpoint potential areas where the institution can be most effective in improving student retention. If concrete interventions aimed to curtail attrition in online courses are to be successfully designed, developed, and implemented, one must understand the environment in which they are to be used.

The following section will therefore make use of the weekly survey to illustrate possible changes in the attitudes and behaviours of the students within the individual courses as a possible factor that contributed to the drop out decision. Additional information from other sources, including the grade sheets and the course outline, will be used to help add context whenever possible.

## **Chemistry**

Although determining retention patterns in the chemistry course may prove to be more challenging due to its low attrition rate, the analysis nonetheless provided opportunities for improvement, as well as insight into successful practices that may be transferrable to other courses.

The peak hazard rate for students enrolled in CHEM 208 occurred during week seven when it reached 10%. Although the overall numbers were relatively low when compared to the other subjects, it was noted that according to the course outline, week seven coincided with the posting of the term project topic. The quizzes, which were scheduled for weeks four, six, and nine, did not seem to affect the overall attrition rates.

The expected grade of the students in CHEM 208 remained much higher than those in the other courses throughout the semester and averaged over 85%. It is conceivable that this was one of the reasons for the low overall attrition rate in the course.

Motivation and satisfaction levels rose significantly as of the fourth week, which coincided with the first quiz. The fact that the students did well on that assessment, as demonstrated by the 79.5% ( $SD = 18.1\%$ ) average grade, may explain why the students were happy with their experience. The second quiz, which occurred during the sixth week, was even better. Students averaged 94.0% ( $SD = 9.5\%$ ), and this likely fuelled the continued increase in satisfaction and motivation levels.

As previously mentioned, the only notable increase in the hazard rates of the students in CHEM 208 occurred in the seventh week which coincided with the posting of the topics for the term project. Although this event did not seem to faze the students (they remained optimistic about their performance in the course), the seventh week marked the lowest value measured on the communication scale. That being said, since the project was not due until after the drop out period had passed, it is plausible to believe that a drop in the motivation and satisfaction levels may have occurred during that time.

However, a distinct drop off in the motivation and satisfaction levels did occur during the ninth week of the course, which coincided with the third quiz. Performance on the third quiz was significantly lower ( $M = 79.8\%$ ,  $SD = 17.5\%$ ) than the second, which may explain the decrease, although in terms of quantity, the slump was not that important.

As was the case with the other two courses, the chemistry students who completed their assessments had a much better chance of persisting in the course. In fact, of the students who completed any of the quizzes, almost all of them persisted in the course (99%). On the other hand, half of the students who did not complete the first quiz eventually dropped out of the course. Although this value decreased to 38% for the second quiz, and 39% for the third quiz, this was likely a product of the fact that the first quiz was worth more towards their final grade. Three-quarters of the students who decided to discontinue the chemistry course did not complete any of the quizzes.

All in all, the low attrition rates in this course could be attributed to the very high expectations that students had with regards to their final grade, especially when compared to the values measured in the other courses. Although the initial quizzes accounted for only 11% of their final grade, the impressive overall performances of the students on those assessments may have buoyed their high motivation and satisfaction levels past the drop out deadline. However, the chances of dropping out of the course were elevated if a student did not complete a given quiz, and they were almost certainly retained in the cases where they completed them.

The modest increase in the class hazard rate during the seventh week was likely the result of students re-evaluating their expectations about the work they would need to put in for an assessment that is worth 20% of their final grade. However, the feelings of disconnectedness from their classmates that same week may suggest that students in this course could be more inclined to drop out because of the feelings of isolation, as opposed to poor performances.

## **Finance**

Although the probability of dropping out approximately doubled between week seven and week eight, students enrolled in “Personal Finance” experienced their highest hazard rate during week nine, when 5.6% of the remaining students withdrew. This figure dropped to 3.4% in the final week before the DISC deadline. Consequently, the hazard function for this course was positively-skewed, meaning that the majority of students who decided to drop out of this course did so in the final three weeks leading to the deadline.

When part-time and full-time students are investigated separately, the peak period for both groups remained unchanged at week nine. However, the peak hazard rate for part-time students was double that of full-time students. Given that it has been established that there were more part-time students dropping out than full-time students, this difference was not unexpected.

If a student's final grade was indeed associated with their motivation levels and a willingness to pursue in their studies (Keller, 1987), then one would expect lower expected grade values to coincide with increases in student dropout. Similarly, increased attrition should coincide with decreases in the level of motivation to continue in the course, as well as in satisfaction levels. And finally, if feelings of isolation were indeed a major cause of students deciding to drop out of their online course, then one would expect the values to be lower when the chances of discontinuing the course were higher.

Students who were enrolled in the finance course and who responded to the weekly survey reported a sharp drop in their expected grade during the fourth week, and this seemed to coincide with a minor increase in the hazard rate from the survival analysis, as well as with a slight drop in the motivation levels to continue in the course. The changes that particular week may be attributed to the fact that students had just submitted their first assignment. The increase in expected grade and motivation levels the following week (five) would likely reflect that their performance had been better than they had expected. In fact, the overall average on the first assignment was 78.0%.

The increase in the hazard rates among students in FINA 200 during the sixth week of the course was reflected by the lower motivation levels, feelings of disconnectedness with fellow classmates, and the lowest satisfaction levels of the semester. This likely coincided with the fact that the sixth week of the course corresponded to the due date for their second assignment.

The decrease in the expected grade of the students continued from that point on, and coupled with decreasing communication with classmates, this coincided with an increase in the hazard rate for the course. The slight drop in the satisfaction level identified in the ninth week coincided with the submission of the third assignment and was likely at the root of the significant increase in attrition for that period.

With regards to the assignments, the analysis of the grade sheets demonstrated a distinct pattern among the students pertaining to their participation level. It was certainly not unexpected for students who did not submit their course work to have a tendency to drop out of the course. Two-thirds of the students who discontinued their course did not submit any work whatsoever. However, what was noteworthy was the fact that half of the students who did not submit their first assignment eventually dropped out of the course, and that the persistence rate for those who completed the work, irrespective of their performance, was 96%. Moreover, with each assignment, the attrition rate increased for a non-participant, and the persistence rate increased for those who completed the work. In fact, of the students who handed in assignment three, none discontinued FINA 200.

All in all, the motivation and satisfaction levels of the students seemed to dip with each assignment due date, and this was reflected in the higher attrition rates in the hazard function during that same time period. However, they did not necessarily reflect the magnitude of those hazard rates which increased with each assignment due date, but rather, they were skewed towards the last submission date before the dropout deadline. In addition, the completion of course work just about ensured that the student would persist in the course, whereas a failure to hand in an assignment likely resulted in the opposite event.

## **Religion**

According to the results of the survival analysis, the peak hazard rate in RELI 216 occurred during week eight when 7% of the students still in the course dropped out (including 11.8% of the part-time students). This was more than triple the rate of the previous week. As a matter of fact, two-thirds of the students who withdrew from the religion course did so in the final three weeks (weeks eight to ten) leading up to the DISC deadline.

The responses of students who completed the weekly survey somewhat reflected that pattern in the measure for expected grade. There was a significant decline in this value as of the eighth week of the course that continued through to the DISC deadline. Motivation levels also dropped

considerably as of the eighth week and reached their lowest point in the ninth week. This measure mimicked the satisfaction scores, which plummeted to their lowest level during the same week.

The high hazard rate during the eighth week of the course can likely be explained by the fact that this coincided with the deadline for the submission of the mid-term exam. Although students had a full week to complete and hand-in the assessment, the comments collected from the students, either via the Exit Survey (if they dropped out), or through the course evaluation (if they persisted), expressed their discontent with the mid-term exam.

Up to that point in the course, students had filled out a weekly response to their readings. These responses were each worth 1% of their final grade. By the time they reached the mid-term exam (worth 40% of their final grade) they had accumulated a maximum of 6%. Therefore, the mid-term was the first significant assessment they had to complete in the course.

Several students who dropped out of RELI 216 mentioned (in the Exit Survey) the complexity of the mid-term exam as the decisive event that contributed to their decision. They were genuinely surprised by the complexity of the exam and were not prepared to invest the significant amount of time needed to complete it. These comments were replicated in the course evaluation by students who completed the course. The students complained about the difficulty and length of the mid-term, but also the amount of readings that needed to be done to complete it.

Students who participated in the weekly surveys were asked about their expected numerical grade. When this was mapped over the semester, the average dropped suddenly the week that the mid-term was posted, and hit its lowest point the following week when the assessment was due. Likewise, when asked about their motivation to continue in the course, an unmistakable drop in the average motivation level was observed as of week seven (the week the mid-term was posted), and reached its lowest point in week eight. Moreover, the average score to the

statement “I am happy with my decision to enrol in this course” was at a semester low during week eight.

The attrition rate among the students who completed reading responses after the fourth week of class declined steadily until the DISC deadline. Because of the nature of the assessments, a more revealing statistic may be the initial participation of the student. For instance, if the first three reading responses were investigated as a group, one notices that of the students who did not complete any of the responses, about 50% drop out of the religion course. About one-quarter of the students who submitted one of the first three reading responses dropped out. The attrition rate was reduced to 12% if they submitted two reading responses and to 6% if they submitted the first three assessments.

The only variable that did not seem to be associated to higher attrition rates was the measure for contact with fellow classmates. It actually increased throughout the semester. In fact, the measures for contact were well above the values given by students in the other courses. This is likely due to the fact that students posted their weekly responses to the class discussion board, and also made use of the feature to participate in virtual office hours. Therefore, they were more aware of the other students participating in the class as the semester progressed. Interestingly, students seemed to reach out to fellow class members during week eight (when the mid-term was due) as the average score for “I am in contact with others who are taking this class” hit its peak.

Despite the fact that the reading responses were only worth 1% of their grade and that a student could skip two submissions and still receive full marks by semester’s end, a failure to submit the work as of the first three weeks had dire consequences for attrition. On the other hand, early participation meant increased levels of persistence. For example, one-quarter of the students who did not hand in the first exercise dropped out of the course, whereas this value climbed to 36% for the second assignment, and 43% for the third. On the other hand, 88% of the

students who handed in their first reading response persisted in the course, and it was a similar scenario for the second and third assessments.

All in all, the weekly survey, through its measures for expected grade, motivation to continue in the course, and satisfaction levels, reflected the build-up that resulted in the peak attrition period for students enrolled in RELI 216. In addition, there was an increasing chance of dropping out of the course for every week that a reading response was not submitted by the student. Conversely, the survival of a student based on the fact that they handed in a reading response was significantly higher than the overall average for the course.

## **Overall**

The weekly survey confirmed the fact that student motivation levels, their satisfaction with the course, and their feelings of isolation will fluctuate throughout the semester. This would validate the re-evaluation of commitment levels proposed by Tinto (1975), as well as the feedback loop suggested in Kember's (1989) model for persistence in distance education. In effect, based on the fact that hazard rates seemed to increase with each assessment due date, one could postulate that this was likely when the cost-benefit analysis was carried out by the students. It was when a mental effort was needed that students went through the evaluation process to decide if they should make the investment required to complete a particular assessment or project in their online course.

The results of the survey also corroborate Garland's (1993) proposal that students who persist in the course will face the same obstacles as those who eventually drop out. This was reflected by the hills and valleys in the motivation and satisfaction levels (measured by the weekly survey) throughout the semester. It should also be noted that students who responded to the course evaluation (only available to students still enrolled in the course) complained about the time the course took, the difficulties they had with the assessments and the content, and the mismatch in their expectations. Thus, despite encountering the same barriers as students who eventually dropped out, these individuals managed to persist in their online course.



The longitudinal nature of the weekly survey also allowed for the comparison of these responses to the results of the survival analysis. The relationship between the changes in the levels of motivation, satisfaction, expected performance, and communication were observable. They could often be mapped into their corresponding hazard function. However, the magnitude of the changes in the attitudinal levels was not necessarily indicative of the changes in the attrition rates which seemed to crest at the end of the drop out period.

This finding, coupled with the pattern that was identified among students who discontinued their course with regards to the submission of course work, would seem to indicate that the decision to drop out does not necessarily occur at a certain point during the semester. Rather, it was more likely that for many students, especially those who have not been active in the course, the decision to drop out may be made earlier in the semester, but that they waited until the DISC deadline approached before acting on it.

One must wonder if a lack of time management skills was a determining factor in their decision to drop out of the course, and if this same phenomenon could explain why they procrastinated until the deadline to act upon their decision. However, students who were not performing well despite having participated in the course may have waited until the deadline to drop out because they genuinely felt that they had a chance to improve their situation. The energies that they had invested into the course thus far made the decision to drop out even more difficult, and was likely another reason why they waited until the deadline to act on it.

When analyzing the results of the weekly survey, one must consider that the retention rate of the students participating in this exercise was higher than the overall value for the course. Therefore, the vast majority of the students who responded to the survey persisted in their online course. Furthermore, if a student dropped out of the course, they likely stopped responding to the survey, which meant that by the end of the data collection period, an even higher proportion of the respondents were continuing with the course. This may have had a positive effect on the overall levels of motivation and satisfaction as the semester progressed,

and may explain the increased motivation levels in the finance and religion courses in the final week before the drop out deadline, despite the fact that the hazard rates in both cases remained high.

The weekly survey allowed for comparison between the courses to discern any discrepancies in their retention rates. It had previously been proven that the attrition rate among students in the chemistry course was significantly lower than those in finance and religion. The most striking differences between the responses of the students in chemistry and those in the other two courses occurred in the measure for satisfaction. The average response from CHEM 208 students was 8% higher than religion students, and 16% higher than finance students. Also, motivation levels for religion students were 6% lower than those in chemistry, and for finance students they were 12% lower. Similar differences were seen in the average expected grade.

Interestingly, students in the religion course scored much higher than all others for communication with fellow students. This is likely because it was the only course that made regular use of the class discussion board. Despite this finding, RELI 200 still had the lowest retention rate of the three courses, even though students in the finance course possessed the lowest average scores in all four measures. This would therefore imply that other factors must have contributed to the attrition of the students, possibly a mismatch in the expectations pertaining to the mid-term in week eight, or the fact that a higher proportion of mature and part-time students were enrolled in the course.

### ***Tinto: Reloaded***

As is the case with many of the past research on retention, one has a tendency to come back and visit Tinto's (1975) Interactionalist Model of Student Persistence to compare and contrast. In this study, several of the constructs presented in Tinto's model were investigated in the context of attrition in online courses.

Despite the lack of concrete proof that they have an effect on persistence, a student's pre-entry characteristics has traditionally been included in retention research. As was suggested by Tinto (1993), every possible personality trait has been associated to retention at one point or another. However, since the demographic information is likely the easiest of all to collect if one has access to the institution's registration database, it figures prominently in retention research. This dissertation was no exception.

In some cases, such as with gender, language, immigration status, and source to the university, no differences were found. In other cases, a significant and sometimes unforeseen association was discovered, as was the case with parents' education, a student's faculty of study, program preference, experience at the university, and the type of programme in which they are enrolled. However, according to the results of this study, the most likely influence on persistence in online courses involving a student's background characteristics takes into account their previous academic performance and drop out behaviours.

However, that being said, they do little to explain the reasons why the students drop out of their courses. In fact, other than segregating the students who exhibit certain characteristics that are consistent with high risks of dropping out, there would be absolutely nothing else that could be done by the institution to curtail attrition if one relied solely on demographic information.

Therefore, an institution who wants to be proactive in influencing retention must focus on ways to enhance the academic and social integration of its students within the individual courses. To complicate matters, the medium of instruction must also be considered in the possible interventions. The lack, and sometimes absence, of an on-campus presence by the students enrolled in online courses would suggest that academic integration plays a much more vital role in attrition. This was indeed found to be the case in commuter institutions when compared to residential settings since students have much fewer opportunities to become socially integrated (Pascarella & Chapman, 1983; Braxton et al., 1993). In essence, commuter students place

reduced importance on institutional commitment and social integration because they spend much less time on campus (Sweet, 1986).

One would therefore assume that part-time students and particularly distance education learners would feel the same way, thereby putting added emphasis on the importance of academic integration. Moreover, this would be much more relevant in asynchronous online courses since communication between the constituents is rarely in real-time.

On the other hand, despite the fact that they were enrolled in an online course, full-time students must be on campus at some point in time. Since Concordia does not have full undergraduate programmes online, these students still have courses offered in a classroom setting. Subsequently, social integration remains an important factor for these students, although not necessarily in the online course per se.

### **Academic Integration**

In previous studies, academic integration was analyzed using various metrics. The simplest way to determine how a student was conforming to the norms established by the institution was to look at their performance. Consequently, student grades have been used to evaluate their academic integration. Another aspect for academic integration involves a student's experience at the university. This can be measured by the amount of time that they have spent at the institution, as well as by gauging their satisfaction with the experience.

### **Performance**

Although measuring student grades may be appropriate when determining the likelihood that they will continue in their programme of study, grades on their own will not aid administrators in determining if a student is likely to drop out of a course they are currently enrolled in unless there was a way to measure their performance early on.

Performance on early assessments could be one way to assess early academic integration within the online course. As pointed out by Rekkedal (1982), students who make the decision to drop out of a course do so early on and it is often demonstrated by the lack of work they complete. Simpson (2003) identified that students who did not submit their first assignment had much higher attrition rates than those who did, and over 35% of the students who dropped out did so before submitting any work. Furthermore, only a fraction of the students who did not submit their first assignment submitted their second as the rest became dropouts. This finding was corroborated in this dissertation.

Students who have made an effort to participate in the course in any way, whether it was through the submission of assignments, or the completion of quizzes, were more likely to persist in the course than those who have been passive. Astin's (1984) theory of involvement in higher education suggests that learners who devote more physical and psychological energy to the academic experience were more likely to persist in their studies. Similarly, investment theory proposes that students who invest more resources into a course are more likely to persist in them (Okun et al., 1996)

The results of the analysis of the grade sheets confirmed these claims. In all three courses a significant proportion of the students who did not submit their work in the course eventually dropped out. For instance, of the students in chemistry who did not complete the first quiz, half eventually dropped out. Three-quarters of all the students who discontinued did not complete any work in the course whatsoever. Just under half of the students who did not submit their first assignment in the finance course dropped out and two-thirds of the students who decided to drop out did not complete any work at all.

Due to the nature of the assessments for the religion course, the trend was less obvious. Nonetheless, of the students who did not complete the course, one-third did not complete the first reading response, and two-thirds did not complete any of the first three reading responses.

The likelihood of a student dropping out given that they did not submit one of the first three reading responses in the course steadily increased with each deadline.

On the other hand, students who submitted their work drastically increased their chances of retention as the semester progressed. The more work they submit, the more time and effort they have invested in the course, and the higher their chances of surviving past the deadline for academic withdrawal.

Some researchers have suggested that grades are the most important predictor of persistence in higher education (Astin, 1972; Mallette & Cabrera, 1991), whereas others have refuted the existence of a relationship between performance and persistence (Pascarella & Terenzini, 1979).

In this study, the past performance of students did influence their persistence, as did their performance within the course. Students with weaker CRC and cGPA scores tended to have higher attrition rates than those with better entering grades. The data gathered from the WBLQ indicated that students who dropped out of their course were more likely to have responded that they intended on dropping out following a poor performance than those who persisted. Moreover, numerous students indicated in the Exit Survey that a poor performance was the root cause of their decision to drop out of their online course. The poor performance led to a loss of motivation and a fear of poor overall performance in their elective course.

In addition, whether or not this measure is considered previous performance or previous behaviour, the survival analysis involving previous drop outs by students was irrefutable in singling out this variable as an unmitigated predictor of future attrition behaviour. The remarkably low retention rates of students who had previously dropped out of a single course left no doubt of the effects of this variable on persistence. Although this variable reflects the academic integration of the learner at the educational institution, it will not aid in the early detection of problems within the confines of the individual course. Nonetheless, a student who

had previously dropped out of at least one course at the university was found to be at the highest risk of repeating this behaviour in the online course.

### **Experience**

As was previously investigated, academic integration can also be measured as a function of the time that they have spent at the institution. One would speculate that the longer a student is at the university, the better their academic integration. Although this was found to be true for the first four years, it was also determined that the performance of the students diminished as of the fifth year of study.

When the amount of credits completed were used to estimate academic integration, it was found that the students with the least amount of credits had higher attrition rates than those who had completed at least two full years of a programme (60 credits). Similarly, students who had completed the bulk of their degree requirements were less likely to discontinue their course than those in the initial stages of their programme.

Measurements of academic integration must therefore involve both experience and performance in the university setting. Students who had the skills necessary to adapt to the learning environment proved it through their positive performance and their rapid accumulation of credits. On the other hand, students who struggled to become academically integrated did not perform as well in their courses and tended to “loiter” at the university for a longer period of time.

This may explain why weaker students with little university experience (less than 30 credits) and no previous history of dropping out tended to wait until the final week leading to the DISC deadline to drop out of their online course. In addition, this may also shed some light on why students enrolled in the mature entry programme, who tend to be older, studying part-time, are weaker academically, have previously dropped out of more courses, and have been at Concordia longer than most, experience such high attrition rates.

## **Satisfaction**

According to Borden (1995), satisfaction levels are linked to academic integration through higher academic achievement. High satisfaction levels, in turn, have been associated with higher retention rates (Walker & Hudson, 1999). A lack of satisfaction with the learning experience is a major factor for dropping out (Levy, 2007) and student satisfaction was isolated as one of the five pillars of quality online education (Lorenzo & Moore, 2002).

According to Chyung (2001) a lack of motivation can be the result of low self-esteem (confidence) and dissatisfaction with the overall online learning experience. Satisfaction factors could be measured in students for the course management, the support services, the promptness of the delivery of material, as well as the instruction (Biner et al., 1994). The student satisfaction levels could also be extended to the design of the course (Khan & Vega, 1997), the volume of coursework, and the course assessments.

Ultimately, many of the institutional barriers that were identified by the students as reasons that they dropped out of the online course could arguably be linked to their satisfaction. For instance, lack of communication and feedback, unhappiness with the assessments, lack of procedural information, uninteresting/confusing design, and lack of organization of the content can all be traced back to student dissatisfaction with some aspect of the course.

In addition, the relationship between the measures for satisfaction collected in the weekly survey, and the corresponding hazard function from the registration data, serve as further proof of the association between satisfaction and attrition. As the student satisfaction levels began to waver in the course, the corresponding attrition rates increased. In other words, much like a customer, satisfied students must receive timely, personalized, and responsive services and support. Otherwise they will leave to likely seek those services elsewhere.



## **Social Integration**

In previous studies on retention, researchers have often referred to a lack of social integration in the academic environment as one of the main reasons for dropping out of higher education (Tinto, 1975). In particular, lower levels of social integration by part-time (Pascarella & Terenzini, 1980) and commuter (Sweet, 1986; Braxton et al., 2004) students were identified as a cause of academic withdrawal, likely because of the reduced opportunities to become assimilated into the school's culture, as compared with full-time and residential students. Kember (1989) argued that these same factors were prevalent in distance education due to the nature of the students who were enrolling in these courses (they were non-traditional), as well as because of the medium itself (no face-to-face social interaction). However, several issues arise when these assumptions are applied to this study.

First of all, one must consider the fact that the previous studies were based on retention in a programme. Therefore, the timeline for becoming socially integrated spans over several years and across multiple courses. In contrast, since this study focuses on a single course offered over a 13-week semester, the length of time involved to become socially integrated is much more constrained. One must also consider the fact that students enrolled in the online courses represented a variety of university experience; the study did not focus solely on tracking first-year (freshmen) learners. Therefore, their level of social integration with the educational institution must have varied as well.

Second, the results of this study did not provide any evidence to suggest that the students enrolling in the online courses were significantly different than the ones who roamed the campus. In fact, in the case of the majority of the online learners, it turned out that they were also taking classes on-campus (i.e., they were blended learners). This is not to say that there was a shortage of students who embodied the characteristics of non-traditional learners (Kember, 1989; Rovai, 2003), but they were by no means the dominant demographic among the students opting for this medium of instruction.

Tinto's (1975) seminal model highlighted the combined influence of academic and social integration in the student's decision to persist in an undergraduate programme of study. Whereas academic integration focuses mainly on the performance and intellectual development of the students, social integration deals more with the student's assimilation into the social system of the academic institution. It was suggested that social integration occurred through "informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and administrative personnel" (Tinto, 1975). Subsequently, the main objective of these interactions, the majority of which occurred outside of the classroom, was to establish a social support system that could potentially buoy a learner's commitment levels to the institution and, in doing so, increase their chances of persisting in their studies.

Due to the fact that this dissertation revolved around the lifespan of individual online courses (not on-campus programmes) and involved students with various university experience and different levels of social integration, the applicability of the role of social integration in this particular context, as described by Tinto (1975) and revisited by many other researchers, must be reconsidered.

For instance, one could argue that the role of social integration in a student's decision to drop out of their online course should be downplayed since the opportunities for interaction are lessened (or non-existent) due to the nature of the medium. There are no scheduled opportunities for face-to-face interaction since students do not need to be on-campus to attend class and, much like the situation for part-time and commuter students, the lack of on-campus presence results in less social interaction and higher attrition rates.

However, this study has demonstrated that the majority of students enrolling in the online courses are blended learners, meaning that an on-campus presence was required to complete their degree. The high frequency of students citing that the online course was recommended to them also hints at the presence of social interaction with their peers outside of the classroom setting, particularly among full-time learners.

In addition, unlike correspondence courses, computer-mediated communication provides opportunities for students to become socially engaged with their instructors, teaching assistants, and fellow classmates within the virtual learning environment (Anderson, 2003). Therefore, despite the fact that they do not meet face-to-face, students had ample opportunities to interact with others involved in their course via e-mail, the discussion board, or by using real-time communication tools such as chat rooms and desktop audio and video conferencing (i.e., Skype, MSN Messenger, etc...). Anderson (2008) suggests that online courses that lack opportunities for students to establish a social presence would privy their ability "...to express disagreements, share viewpoints, explore differences, and accept support and confirmation from peers and teachers".

Also of interest was the fact that students enrolled in the online courses had set particularly low expectations for communication with fellow students and the instructor at the onset of the course, as demonstrated by the results of the WBLQ. This finding suggests that the learners may have had low expectation levels for social integration regarding their asynchronous online experience.

Not surprisingly, the results of the Exit Survey identified that feelings of isolation and a lack of communication and feedback were prominent reasons given by students for dropping out of their online course. In fact, a lack of communication and feedback was the most popular complaint among students responding to the Exit Survey. This seems to support the notion of the importance of social integration in online environments in the dropout decision. However, when students were allowed to elaborate on their reasoning for dropping out of their online course, the role of social integration in this context was clarified.

In particular, the frustration expressed by the students in these cases was due to a lack of the timeliness of the responses to their questions pertaining to the course assessments. Students had questions or needed clarifications pertaining to their assignments, the online quizzes, or about the mid-term, and they dropped out of the course because they either did not get a

response in time and/or it was too vague and would delay their ability to continue with their coursework.

Over half of the students who dropped out responded negatively about the feedback they had been getting in their course, and a similar proportion admitted that they did not use the discussion board. On the other hand, of the students who persisted in the course, three out of five responded that they were satisfied with the feedback they had been getting and the same proportion made use of the discussion board.

Part-time students, who were found to have higher attrition levels than full-time learners, may have had higher expectations when it came to communication. In fact, they were more inclined to make use of computer-mediated communication to interact with their instructor and peers because they were rarely on-campus due to their other commitments, and as a result, they had an increased reliance on this mode of communication. This is especially true if the majority of their school work was completed outside of normal business hours.

All in all, the computer-mediated communication tools were indeed being used by the students as a means of social interaction, but not for the same reasons as suggested by Tinto (1975). Instead of establishing and reinforcing their social support system (i.e., social integration), the students in these courses tended to make use of the tools as a substitute for the communication that would normally occur in the live classroom setting. Hence, the goal of the social interaction in these cases was to answer the questions that they needed in order to maximize their performance on class assessments. Social interaction with the faculty and peers was a way to increase academic integration in the course as opposed to increasing one's social integration within the educational institution.

Although there is no doubt that social interactions can foster higher social integration levels, their purpose in this much shorter timeframe and in this medium of delivery strives to increase

academic performance. Therefore the communication within the course, which is made possible using computer-based technologies, was initiated for a distinct academic purpose.

This is not to say that social integration is non-existent for students enrolled in online courses. But perhaps the public nature of some of the tools, such as the discussion board, may curtail the type of non-academic interaction that would normally occur in the classroom setting. Or, perhaps these types of exchanges take place of the structure of the online course where the other class members cannot participate and the researcher cannot monitor (i.e., Facebook, MSN Messenger, personal e-mails, organized face-to-face meetings, etc...).

The instructional design of the courses could also affect the impact of social integration. For instance, an asynchronous environment means that learners are not bound to a particular schedule to access and manipulate the course materials. There is more emphasis on computer-mediated communication, computer literacy, and written communication skills. Subsequently, the opportunities to communicate with fellow students are likely lower than in real-time classes, and this was reflected with the low expectations for communication. Perhaps if the courses had more built-in activities that fostered student exchanges (i.e., debates, group work, etc...) the impact of social interaction on persistence would be more significant since students would have more contact with classmates due to their higher levels of social presence in the online class.

The effect of social integration on the dropout decision, as conceived by Tinto (1975), targeted programme retention and thus, likely needed more time to develop than what is possible in the confines of a single course. Since all students enrolled in an undergraduate programme at Concordia must spend time on campus at some point during their academic career, one can assume that social integration within the institution can still play a significant role in their decision to persist in their studies over time. But there was no evidence to suggest that this same measure had a significant impact in the context of the dropout decision in the asynchronous online course, especially when compared to academic integration.

On the other hand, social interaction, which was fostered by computer-based communication techniques, played an integral role in the online course as it served as a lifeline for the students who were separated by distance and time. Since they did not have face-to-face interactions with their classmates and instructors, this served as their primary means to acquire any additional information that they needed in order to maximize their academic integration (i.e., performance) in the course.

### **The Dropout Decision**

According to Tinto's model, the student's decision to persist in their studies is the by-product of the academic and social integration of the student within the institution resulting in a revision of their level of goal and institutional commitment.

In the context of this dissertation, the short-term academic goal of the learner is to complete the online course, whereas the long-term objective may be to obtain a degree or to be accepted into a preferred programme of study. The commitment to complete the course, therefore, is a function of the student's academic integration within that course. This means that a student's performance in the course, coupled with their experience, would play a major role in their decision to persist.

On the other hand, institutional commitment, which is more affected by social integration, would likely not play as large a role in the context of an asynchronous online course. This was somewhat justified by the fact that feelings of isolation and expectations for communication did not seem to affect student persistence in the online courses. That being said, the most popular reason that was cited by students for dropping out of their course was a lack of communication and feedback. Although this may seem like a definite social component of the course, one can also speculate that the nature of the communication was less for social integration, and more for information that was needed to increase academic integration.

The persistence model in distance education proposed by Kember (1989) included external factors into the retention equation in response to one of the main criticisms of Tinto's (1975) original model which was not seen as being as relevant for non-traditional students. The influence of non-academic factors on attrition was corroborated in this research as several students cited work and family commitments as reasons for dropping out. Interestingly, it was also found that in many of these cases, these factors were also at the root of their decision to enrol in the online course.

Rovai's (2003) model suggested that certain skills were needed for learners to persist in online courses, especially as it pertains to computer literacy and communication. These factors did not prove to be significant in the student's decision to drop out in the context of this research. Then again, this could be due to the fact the students enrolling in online courses at Concordia University already had the basic technical skills needed to survive in an online course. Had they not had confidence that they possessed these skills, they would likely not have enrolled in a course delivered entirely online.

However, one construct that showed promise in affecting retention was self-directed learning. Students who were not used to this concept, and who were unwilling to make the necessary changes to adapt to the more flexible, self-paced environment, were more likely to drop out of the course.

Ultimately, the decision to drop out of a course is an economic one. Based mostly on their academic integration into the course thus far, a cost-benefit analysis is conducted by the student which weighs the perceived costs and potential benefits relative to persisting in the course, versus the potential benefits of diverting their limited resources elsewhere.

The results of the survival analysis, as well as the weekly survey, suggest that this analysis is conducted each time an investment of resources (e.g., time, mental effort, energy, etc...) is required of them for the course. This typically occurs when assessments are due, such as

assignments, quizzes, and mid-terms. This validates the feedback loop, as proposed by Kember (1989), as well as the fact that commitment levels can serve as both input and process (Tinto, 1975). The difference in this case is that it is a commitment to the online course, and not to one's programme of study.

Due to the nature of these online courses, most of which serve as electives for the students enrolled in them, and because there are no undergraduate degrees that are offered entirely online at Concordia University, the decision to persist in the courses in this study usually involve perceived performance. The bottom line is that if students lack confidence that they can recover from a poor performance on their first assessment, or if they do not want to (or are unable to) devote the mental effort required to earn a good grade, or if they have previously dropped out of a course at Concordia, they are more likely to decide to drop out of their online course rather than risk jeopardizing their grade-point average.

In other words, students would rather lose their tuition and costs associated with the course thus far because they can protect their academic performance and the attainment of their academic and professional goals, and because they can afford to do so thanks to low tuition costs.

On the other hand, should a student make an investment of their time and energy in the course, either by submitting an assignment or completing a quiz, they are more likely to persist in the course. The more they invest in it, the better their chances of surviving past the dropout deadline.



## **CONCLUSION**

Previous research on retention had attempted to associate individual characteristics to student retention in order to predict its occurrence. However, because of the uniqueness of educational institutions, the changing demographics of the students enrolling in higher education courses, the evolution of technology, and the sheer magnitude of the other variables that may influence a student's decision to persist (or not) in their studies, researchers have time and again been unable to derive a panacea regarding the problem of student attrition.

Retention studies presented a paradox for researchers. Studies with too few variables provided an incomplete picture of the phenomenon, and those that attempted a more comprehensive approach produced models that were too cumbersome to be of any practical use.

However, this is not to say that previous studies have been fruitless. They may have failed to produce an all-encompassing theory to address retention, but they have contributed and advanced the research in the field by identifying variables that seem to influence the dropout decision, by introducing various methodologies to study retention, and by devising models and suggesting theories that could help to explain the phenomenon. But despite the assorted conclusions that have been made throughout these decades of research, it is not the lack of an overarching model that should be of concern for educational administrators, but rather a dearth of prescriptions for effective, concrete interventions.

For example, whatever was learned from the countless number of retention studies that have been carried out involving freshmen students enrolled on a full-time basis in classroom-based courses at residential universities had limited applicability to other settings. However, such research did produce actual interventions (e.g., orientation sessions, "frosh" week, mentoring programmes, etc...) aimed at retaining these students within their programme of study. By

introducing these interventions, an educational institution undertakes a proactive approach to the retention of its students. These interventions target a particular audience during a period of time when they were found to be the most vulnerable to leaving the institution (in their first year).

In contrast, this research involved undergraduate students whose personal characteristics were undefined, a commuter university in an urban environment, and a unique educational system. In addition, the study focused on individual courses as opposed to programmes of study, and the medium of delivery targeted off-campus students. To further complicate matters, the inability to generalize from previous studies, coupled with a deficiency of research specific to attrition in asynchronous online courses, made the development of effective strategies to improve persistence within this particular educational institution a daunting endeavour.

As a consequence, this exploratory study attempted to set a framework that would enable institutions to study and improve the retention rates of their online courses. To do so, it shifted the centre of attention of the research away from the creation of yet another fruitless predictive model, and instead focused on identifying the facets of retention that were within the educational institutions' immediate sphere of influence. Rather than a top-down approach to curtail retention, where one attempts to create an overarching solution to solve a universal problem, this dissertation allowed for the principal stakeholders to guide the research within their own microcosm in the hopes of eventually developing efficient and effective interventions that would provide immediate dividends.

Retention is a multi-dimensional and complex issue. This dissertation did not demystify this perspective, but rather reaffirms it. However, the multitude and variety of data collected using a number of instruments made it possible to determine who was dropping out, when they were most likely to do so, and why they were leaving. This in turn suggests the development of tangible interventions to help curtail the problem. This chapter summarizes those findings, puts

forward possible interventions, proposes further research opportunities, and suggests what can be retained and applied to other contexts.

## **Enrolling in Online Courses**

One of the goals of this dissertation was to establish the identity of the students who were enrolling in the online courses, and to determine why they chose this particular medium over the more familiar classroom environment. Previous studies (e.g., Bean & Metzner, 1985; Kember, 1989) had suggested that individuals who were not “traditional” learners preferred distance education opportunities because of the additional responsibilities they had that prevented them from enrolling in classroom-based courses (e.g., family, work). Consequently, it was proposed that students enrolling in online courses had unique needs that had to be taken into consideration.

In contrast to these claims, this dissertation found no evidence that the students who chose to enrol in online courses at this institution were any different than the ones who were sitting in the classrooms. In fact, these students were one and the same, especially among full-time learners. This would imply that they attended on-campus courses at some point during the school week. Moreover, the demographics of the online students based on their gender, age, and student status was found to be equivalent to the ones on-campus.

That being said, students who were enrolled in the mature student programme most closely fit the characteristics that were embodied in the description of the “non-traditional” learner. These students tended to be older, and a higher proportion of them were enrolled on a part-time basis. As well, all of them had interrupted their studies at some point since high school. However, they represented a small minority of students among more traditional learners.

As an increased amount of traditional research universities begin to explore online formats for their courses, more students who would normally enrol in the classroom-based courses may venture to distance learning. Not only are online courses convenient, but the gradual

acceptance of this form of content delivery in higher education circles may make it an increasingly appealing option.

All in all, the main reason that students opted to enrol in online courses was to increase the flexibility that they would have in their daily schedules. Of particular importance to these individuals was the need to work. Therefore, enrolling in online courses offered additional flexibility in their attempt to balance employment with academics. It was determined that the majority of the students in the online courses worked in some capacity during the semester regardless of their student status, although the part-time students had a higher proportion of full-time workers.

Students also chose the online environment because it would allow them to study at their own pace, and minimize their travelling to and from the school. One could argue that these findings are related to the need for more control and autonomy, not only in their scheduling, but also in their learning experience.

Not surprisingly, most students expressed a genuine interest in the subject matter, an issue that was critical in choosing their particular online course. In addition, given that they were aware that the course would be delivered entirely online, confidence in one's computer skills was also a major factor in their choice.

However, a significant proportion of the students admitted that they enrolled in the online course because they thought it would be an easy elective. This is not surprising given that these courses usually serve to complement one's schedule, especially in the case of full-time students. This is no different than seeking an easy classroom-based elective course. The ultimate goal of the students enrolling in these online courses for this reason was to achieve a grade that would improve their grade-point average with minimal impediment to their other activities. In many cases, the expectations about the course had already been set by their peers who had recommended the course to them.

## Meet the Dropout

Several differences were uncovered between students who dropped out and those who persisted in their online course with regards to their characteristics, behaviours, and attitudes. In addition, survival analysis was able to pinpoint periods during the semester when certain groups of students were at an elevated risk of dropping out. In fact, not only were there distinctions in the students themselves that could help explain their dropout decision, but the individual courses offered additional insights as to why the students were doing it, and when it was more likely to occur.

The most influential variable that leads to higher attrition rates among the students was found to be previous dropout behaviour. If a student has dropped out of a course in the past at Concordia, their chances of doing so again increase considerably. With such high hazard rates among students who have at least one “DISC” on their record prior to enrolling in the online course, nothing suggests that these same factors are not still evident in their present behaviours.

All in all, when compared to students who persisted in their online course, those who dropped out tended to be:

- part-time students:
  - Students enrolled in less than four courses per semester had a dropout rate that was twice that of full-time learners (four courses or more).
- older:
  - Students who were 26-years-old or older were more likely to discontinue their course than younger age groups.
- academically weaker:
  - Students with the lowest CRC and/or cGPA scores were more likely to drop out of their online course.
- in their programme for at least five years:

- Students who were in at least their fifth year in their programme of study had higher attrition rates than those in the first four years.
- in the earliest stages of their programme:
  - Students who were in the earliest stages of their programme (and have completed the fewest credits) were more likely to voluntarily withdraw from their course than those who were closest to completing their degree.
- independent or fine arts students:
  - Students who were not enrolled in a particular programme were more likely to drop out, as were those who came from the faculty of Fine Arts.
- mature entry students:
  - Students enrolled in the mature entry programme were more likely to discontinue their course than those in the regular or extended programme.

Although these aforementioned characteristics can be investigated and analyzed separately, this methodology does not necessarily yield results that have practical significance, and furthermore, it would conceal the fact that they are often interrelated.

For instance, based on the registration information, one can claim that older students were more likely to drop out of their online course. Although this has been proven using statistical analyses, the actual difference in the average age between persisters and dropouts was 1.38 years. This is of little practical use for educational administrators.

However, when grouping the students into age groups, it was found that approximately 20% of those over the age of 25 ended up dropping out of their online course. This proved to be a significantly greater attrition rate than in any other age group. Although this fact had more practical relevance, it failed to single-handedly account for what was at the root of the exodus of these students. But when combined with other characteristics that proved to be statistically significant, a clearer picture emerges.

Since older students tend to have more non-academic responsibilities, they often prefer to pursue their studies on a part-time basis. It turns out that older students studying part-time have attrition rates that are at least double that of students studying full-time. Moreover, if a student enrolls in less than four courses per semester, they will need more time to complete their degree and will likely have fewer credits completed than those studying full-time. Therefore, students who are in their programme for at least five years are more likely to be part-time students, older, and have previously dropped out of more courses than anyone else.

Another example of how the combining of these factors helps to better explain the retention phenomenon is demonstrated with mature students. As a programme that caters to learners coming back to school, it embodies several characteristics that have been associated with higher dropout rates. By definition, these students are older than those enrolled in the other programmes, and consequently, a higher proportion favour part-time studies. In addition, these students tend to be academically weaker and have previously dropped out of more courses. Students enrolled in this particular programme often represent a “perfect storm” of the characteristics that foster attrition. It is the accrual of these factors among the learners that are at the root of the increased attrition rates.

Information gathered directly from the educational institution’s registration database has traditionally been the preferred method for collecting retention research data, likely because it is easy to access and to analyze. However, as has been argued in this dissertation, predictive models that have been constructed using this type of information have failed to accurately describe the drop out decision. That being said, one must consider the fact that previous retention research typically focused on programme retention, especially among freshmen students, in traditional four-year residential universities in the United States.

With such a diverse population of students enrolling in online courses, individual characteristics are of limited practical use when it comes to devising interventions aimed at curtailing attrition in that microcosm. Although this data does offer some insight when describing who is more

likely to discontinue their course, additional sources must be tapped in order to uncover the underlying reasons that contribute to the dropout decision. Only in doing so can policy makers achieve a clearer picture of how the institution can effectively intervene.

When studying retention, one of the most important sources of information regarding the decision to drop out has often been overlooked. Whether it was because of the additional efforts needed to acquire this data, or due to the poor response rates, non-demographic information collected from the students who voluntarily dropped out has been a rarity in the literature. Without this information, researchers have been left to extrapolate and guesstimate the factors that cultivated attrition. Since these conclusions have predominantly been based on demographic data, it may explain the inadequate results to date.

One important underlying characteristic of students who were more prone to dropping out involves their lack of self-confidence. Whether it be in their choice of courses, in their computer skills, or in their ability to adapt to the online environment, students who admitted to having lower self-assurance in their abilities were more likely to bail out of their course. This was especially evident among students who confessed that they would be more apt to drop out if they performed poorly on their first course assessment. In other words, low confidence in their ability to recover from a setback in their performance was one of the popular reasons at the root of the dropout decision by certain students.

In addition, students who were already considering dropping out of their course were more likely to do so. However, this dissertation also demonstrated that many of these students eventually changed their mind. This suggests that despite the decision to drop out, additional experiences and interventions can alter a student's attitude towards the course. Until the action is taken, there is a window of opportunity to reverse the drop out decision.

Therefore, the timing of the intervention becomes critically important in any attempt to retain students who are on the verge of leaving their online course. The survival analysis of the



registration patterns of the students was able to pinpoint particular times when they were most vulnerable to attrition. The weekly surveys further demonstrated the highs and lows in their motivation and satisfaction levels throughout the semester in the individual courses. It was through this analysis that this dissertation was able to confirm that students were at the highest risk of dropping out of their online course when they were faced with a task that required their efforts, such as a quiz, assignment, or a mid-term exam. This was especially the case as the deadline to drop out of the course approached.

Furthermore, the analysis of the grade sheets in these individual courses exposed the relationship between the submission of the assessments and the subsequent persistence of the students. Essentially, lack of participation on the part of the student dramatically increases their chances of dropping out, whereas completing any work for the course yields a significantly better chance of persistence.

## **Why Do Students Drop Out?**

The decision to drop out of the online course seems fundamentally the result of an “economic” self-assessment. Students have limited resources at their disposal to invest into their daily activities. Therefore, a cost-benefit analysis is undertaken any time that an activity requires one’s mental effort, time, and energy. If the end result of this investment is outweighed by the potential results of another activity, then the student is more likely to focus on that venture.

The bottom line for the students when considering these online courses, most of which are electives, is their performance. If a student feels that their efforts will not result in a good grade in their course, they are more likely to drop out of it and focus on another activity. This may include another course that requires their attention because it is needed to graduate from their programme or one where they feel that they have a better chance of achieving a higher grade.

Students studying part-time are more likely to have external commitments that may impede their academic pursuits. In fact, in many cases, it is these commitments that are at the root of

their choice to enrol in the online course in the first place. However, it was also determined that if a student enrolled in the course because of these other commitments, it is quite likely that they will drop out of it for the same reasons (e.g., work, family, health).

The data collected from the students who dropped out uncovered additional factors underlying their decision. For instance, the role of the institution in the dropout decision can easily be masked by the type of instrument that is used. Whereas the results of the Likert-scale portion of the survey suggested the importance of dispositional and epistemological barriers to persistence in the online courses, the open-ended portion of the survey calls attention to the significant role of the institution in the drop out decision.

Foremost among the complaints of the students who dropped out were issues such as a lack of communication and feedback, dissatisfaction with the assessments, and a shortage of procedural information. In addition, it may be argued that mismatches in student expectations can also be influenced by the institution. In essence, factors that are synonymous with customer satisfaction play an integral role in the retention of the students enrolled in the online courses.

All in all, students who are having trouble conforming to the academic standards of the online course, either because of a lack of volition, a lack of self-confidence, a lack of resources, or because of dissatisfaction with the “product”, are more likely to voluntarily drop out of it. The fact that the course was offered asynchronously online has not only lowered the expectations of the students regarding communication, but it also appears to have downplayed the significance of the role of social integration in their decision to persist in the course.

Unlike programme retention, where a student can gradually become socially integrated within the educational institution through several courses and semesters, the timeframe involved in an individual course is much shorter. In addition, the communication that takes place within the structure of asynchronous online courses serves as a means to get the additional information they may need to complete their course assessments. A failure to receive timely and/or

comprehensive feedback to these types of queries will be perceived by the learner as an impediment to their chances of achieving a satisfactory performance and subsequently, will increase their risk of abandoning the course.

Thus, this dissertation puts forward the notion that a student's academic integration is at the root of their decision to persist in online courses. At the end of the day, students will drop out of their course to protect their grade-point average.

## **The Role of the Institution**

Although the ultimate verdict to persist in their online course rests with the individual learner, this dissertation supports the premise that institutions play an integral role in the decision-making process. However, to maximize the potential impact of any interventions, the context of the individual courses must be considered in tandem with the characteristics, behaviours, and attitudes of the learners.

With regards to the characteristics of the learners, there is ample evidence to suggest that students who have dropped out in the past will be more likely to repeat this behaviour than students who have never discontinued a course at Concordia. Therefore, one simple way to increase retention is to prohibit students who have previously dropped out a course to enrol in an online course. However, in addition to the possible ethical questions with this type of action, preventing students from enrolling in an online course would not rectify the retention problem since they could just as easily enrol and drop out of a classroom-based course at Concordia. The same factors which were at the origin of their attrition in past courses will likely resurface (e.g., external commitments, lower academic strength, and a mismatch in their expectations). Moreover, the students who were relying on the online courses could seek them elsewhere, thereby lowering the enrolments at the educational institution.

Another possibility would be to only allow students with certain minimum cGPA or CRC score to enrol in online courses, thereby preventing weaker academic students from enrolling. This may

be a more efficient way of controlling retention in the online courses since only students who have proven themselves academically, thus achieving a certain level of academic integration, would be allowed to enrol. However, this would not ensure that these individuals would remain in the course. Several students with elevated grade-point averages do not survive their online course experience. One need only look at students coming from the faculty of Fine Arts as evidence of that fact.

As was mentioned in the previous chapter, it was found that one of the reasons that students dropped out of their online course was because they could afford to do so. The low tuition costs, particularly for students who are residents of the province of Québec, are most likely at the root of this phenomenon. Therefore, in an effort to curtail attrition, the educational institution may want to consider imposing a financial penalty on students who have a history of discontinuing their courses.

Then again, the role of the institution in improving retention should not consist of preventing students from experiencing online courses just because they embody certain characteristics that have been associated with higher attrition rates. For some students, taking courses online is a unique opportunity to continue their education. Others persist despite the fact that they study part-time, are older, or have lower grade-point averages. Preventing students who have a prior history of dropping out from enrolling in online courses will have no effect on their behaviour as they will simply seek the course elsewhere. Rather, the institution should focus on providing the learners with the necessary information to help them set realistic and accurate expectations about the online course, and once the students have committed to pursuing the course, they should be provided with the necessary tools to complete it.

As this dissertation suggests, one of the main reasons that students drop out is that their online experience is not what they anticipated when they signed up for the course. There are several types of expectations that students will establish about the online course upon enrolment. For instance, they will set certain expectation levels related to the complexity of the content, the

amount of effort the course will require, the support they will have throughout the semester, and the learning strategy associated with the medium itself.

The course outline (syllabus) serves the students as the primary source of information about the course at the onset of the semester. As a result, initial expectations about the online course are often established using the content from this document. Therefore, institutions must ensure that the syllabus is as clear and detailed as possible.

Classroom-based courses allow instructors the opportunity to verbally elaborate on the course outline and answer student questions in real-time. This ensures that everyone present has gone over the course outline and that it has been understood. On the other hand, in asynchronous online courses, the onus is on the students to thoroughly read the document before getting started. There is no guarantee that the course outline has been read, or even downloaded by all students once the semester begins. Therefore, the course outline should not only be easily accessible through the course Website, but it should also be e-mailed to each student at the onset of the semester to increase the chances that they have received it (or a direct link to download the document can be included if the file is too large).

Moreover, due to the fact that there is no initial meeting with the students, the instructors (or instructional designers) often do not realize that the course outline for Web-based courses must be much more elaborate than those handed out in classrooms. Ko and Rossen (2004) suggest that new online instructors typically do not include enough information in their syllabi. As a result, it fails to provide all the necessary details to ensure that students establish realistic expectations with regards to the communication in the course (e.g., time before feedback), the assessments (e.g., type of assessments, complexity, grading), the difficulty of the content (e.g., prerequisites, skills), and the expected participation (e.g., amount of contribution to the class discussion board). If participation is graded in the online course, the expected level of participation should also be made explicit in the course outline (Ko & Rossen, 2004).

Although a comprehensive course outline is preferred, it does not guarantee that the information will be received or properly understood by the students. The issue with detailed documents is that they become quite tedious and lengthy. As a consequence, students will find themselves spending time sifting through the syllabus to find pertinent information when they need it. Those with less patience will likely skip to the sections that involve course requirements, grading, and assessments and set their expectations on the little information that they have actually read.

A video recording of an orientation session that goes over the content of the course outline, as it is done in the classroom, is one way to address this problem. If the recording is generic enough such that it does not cite specific dates (e.g., “consult your course agenda for the submission deadline for this project”), it can be re-used in later semesters. Some instructors will e-mail or post a welcome message to their class and use the opportunity to briefly cover the main points of the course outline. The orientation or welcome message also serves as a good opportunity for instructors to present their own expectations of the students, especially with regards to participation, assessments, and other day-to-day course-related activities.

To cut down on the time students might spend trying to find specific information in the course outline (especially when they need it) some standard document design techniques can be employed. For example, if the course outline is available in an Adobe Portable Document Format (pdf) one can make use of the bookmarking feature, thereby allowing students to skip to particular sections. Hypertext mark-up language can also be used to allow students to jump throughout the document by cross-linking related sections. Some course Websites make use of a Frequently Asked Questions page to address common issues that would normally be addressed in the first class.

Despite the fact that the course outline may be comprehensive and meticulous, that an orientation video be made available, and that a welcome message be e-mailed to everyone, there are still no assurances that the information has been received. For instance, this

dissertation demonstrated that many of the students did not attend or watch the orientation session for their online course. In light of this, essential information should be repeated in different locations on the course website (e.g., on the discussion board, posted in a section devoted to important announcements), and sent to the students via email when the information is more relevant. As suggested by Ko and Rossen (2004), “redundancy is often better than elegant succinctness”.

The course outline will not be able to aid students in all cases, and therefore it should not be relied on as the sole intervention on behalf of the institution. To avoid complaints about the content being too difficult, some courses may offer a “pre-test” to gauge a student’s knowledge of the tools they will need in order to understand the course content. For example, a statistics course may offer a short quiz on certain basic math principles that students would need to know. Students having trouble with these self-assessments would be more likely to reconsider enrolling in the course. Furthermore, online courses allow for opportunities to offer remedial tutorials, something that cannot be offered during a traditional lecture. A tutorial on basic math skills, using certain functions in Microsoft Excel, and the meaning of certain Greek characters, can all be added features for an introductory statistics course offered online. Students can be directed to these tutorials based on their performance in the pre-test so that they can work on improving their basic skills as quickly as possible.

Instructors should also consider setting the communication expectations with students and with teaching assistants as early as possible in the course. For instance, adding “e-mail queries will be responded to within two business days” to the course outline is one way to set those parameters. This should also include policies about the expected feedback on assignments, responses on the discussion board, and even returning phone calls. Instructors should also consider activating an auto response e-mail message to acknowledge the receipt of an e-mail that could also include the same information. The auto response would alleviate student anxiety when submitting assessments in this manner, as well as quelling the litany of follow-up queries from the students regarding whether or not their assessment was received.

The increase in the hazard rate when assessments are due can be attributed to the results of the cost-benefit analysis conducted by the students as they consider the amount of work that is required. The situation in the RELI 216 course serves as an excellent example of what can happen when student expectations are inaccurate. In this case, providing more details in the course outline with regards to the mid-term exam would have aided students in formulating more realistic expectations. An even more effective method may be to provide a sample of the types of questions that could be posed. By providing authentic examples of assessments used in the course such as old exams, sample essay questions, and practice quizzes, the students' expectations pertaining to the assessments would be much closer to the actual experience.

The medium of instruction contributes an additional element to the expectations of the students, especially if they are new to online courses. Lifelong study habits cultivated by years of classroom-based instruction will present added stress, especially if there is a need to alter their particular learning style. Their expectations about online learning are based not only on information they have read or seen about courses offered via the Web, but also through the vicarious experiences of their peers (if the course was recommended to them). In some cases, students expected the course to be easier because it was offered online, and others anticipated that the course would offer them the flexibility they needed to maintain their other commitments.

For students who are new to the online learning environment, tutorials and demonstrations about online courses could include general topics such as computer-mediated communication, note-taking, and time management, as well as more specific subjects such as using the class discussion board and dealing with common technical problems. However, these topics should be preceded by information about learning online and the perceived problems that students will have compared to the more familiar classroom-based environment.

Another useful feature would be to create a self-assessment to gauge a student's "readiness" for online learning. This assessment could pose questions regarding the student's study habits,



skills, attitudes, and their personal demographics, and offer advice based on their responses. For example, individuals responding that they are part-time learners or that they have previously dropped out of a course should be warned about the higher attrition rates associated with those characteristics. Students who admit that they often procrastinate when it comes to their school work should be cautioned about the time management problems that are rampant with self-directed learning. Those who express an interest in online courses because of their external commitments should be informed about the fact that these same issues are also typically a cause for dropping out.

The course outline will not be enough to dispel the myths that they may have formulated about the online learning experience. By the time that they realize that their traditional learning strategy must be altered to succeed in their online course, it may be too late. Therefore, the sooner that these misconceptions are addressed, the more time the online students will have to make the necessary adjustments. A sample lesson may be one way to give the students a chance to “test drive” the online course, even before the semester begins. This sample lesson (if not an actual lesson) would have to be as authentic as possible in order to provide a realistic impression of the course content, as well as the environment in which it will be delivered.

One novel way to introduce the students to the online learning environment is to integrate the content covered in the course outline into an introductory lesson. In other words, the first lesson of the online course would be devoted to covering the material from the course outline, as it would be done in the first class in the traditional classroom setting. This could even include a self-assessment based on the information provided in that initial lesson, a video of the orientation session as the lesson’s lecture, and the syllabus included as required reading. Again, it is important that this lesson reflect the design of the course as much as possible so that students can properly assess and acclimatize to the learning environment. The self-assessment in this situation could serve as a useful metric for the instructional design team to help determine how much information from the course outline the learners are actually retaining.

Setting expectations is a shared responsibility between the students and the institution. The earlier the students' expectations are adjusted to match the actual experience, the sooner they can prepare to allocate the resources they will need (i.e., energy, time), and the better the chances that they will persist in the online course. In essence, students should be able to decide if they want to continue in the course within the first two weeks of class, and if they have doubts, they should be encouraged to drop out of the class before the DNE deadline. That way, students who enrol in the online course with unrealistic expectations (e.g., thought the course would be easier) will be less likely to be caught by surprise by the actual experience, and subsequently blame a "mismatch in expectations" as the reason that they discontinued (Hara & Kling, 1999).

These efforts by the institution would not only help manage student expectations and dispel certain myths about online learning, but they would also improve the quantity and quality of the available procedural information. This would invariably cut down on the "lack of communication" complaints and the amount of e-mail and discussion board queries related to getting started in the course would decline.

However, the role of the institution in curtailing attrition does not end once the first two weeks of the course have passed. During the semester, students will revisit and re-evaluate their commitment to the course based on their expectations, experiences, and performance, in much the same way as the initial institutional commitment levels proposed by Tinto (1975). The institution remains omnipresent throughout this period and its actions will contribute to the student's decision about continuing in the online course.

### ***Academic Integration***

This dissertation recognized the fact that students who invest their time and energy into the course have a higher probability of continuing in it. In the case of all three courses that were investigated, students who submitted any course work were more likely to persist, whereas

students who did not participate were likely to drop out. Furthermore, students who volunteered to complete the surveys had higher retention rates than the overall average.

Therefore, one way that the educational institutions can be proactive in identifying students who are at higher risks of dropping out of an online course is to gauge class participation with an early activity. This can be accomplished in several different ways, including an ice-breaker activity (e.g., introduce yourself on the class discussion board), a survey, a short quiz, or an assignment. To maximise participation, instructors should consider offering grades for this initial activity (or bonus marks). The goal of this assessment is not necessarily to measure the performance of the students, but rather their commitment to the course.

Students who fail to participate in this activity are more likely to drop out of the course. Once these students have been identified, an e-mail can be sent to them to inquire about their status in the course and to offer aid should they require it. Essentially, the goal of the message is to solicit an investment in the course on the part of the student. By replying to the message, students not only indirectly devote time to the course, but they also suggest to the instructional team that they are reclaimable. Those students who fail to respond to the e-mail query may have already dropped out, stopped out, or are not reachable via that particular e-mail address.

For students new to the online environment, the lack of a routine is often at the root of their struggles to stay up-to-date with the course. In a classroom environment, the routine is pre-established by the scheduled meetings (class time). Students devote time to the course based on this weekly schedule. Although they also devote time to the course outside of the classroom, the face-to-face meetings also serve as a means of reminding students about upcoming deadlines and assessments. In the online environment, however, it is up to the student to verify their e-mails, the course Website, the syllabus, and the class discussion board to stay informed about the course. In other words, they must schedule their own routine to verify their sources in order to remain informed, and this may not come naturally to them.

In order to aid in this transition, the course instructor or teaching assistants can e-mail and/or post reminders about upcoming assignments and assessments. In fact, some systems allow for automated reminders to be sent to the class. Armed with the knowledge that hazard rates tend to rise when assessments are due, the instructional team could use this opportunity to provide helpful tips and suggestions to help deflate the upcoming stress.

Another technique that can also be used, not simply to inform the students, but also to increase communication from the instructor, is to routinely send out a weekly message to the class list. If this is done via e-mail, these messages can often be reused in future semesters. Some instructors may opt for audio-recordings of these messages which students can download and play on their portable multimedia devices. So, while students should establish a routine to stay updated about their course, the instructional team should also establish a routine to communicate with their students.

Also, instructors may want to consider spreading course assessments throughout the semester as opposed to having the majority of the student's grade hinge upon one or two major exams. The accumulation of smaller investments of their time and energy on a more regular basis will help students keep up-to-date with the course. This will also provide them with more opportunities for feedback to gauge their progress and allow them to make the necessary adjustments to become increasingly academically integrated in the course. However, the downside to such an approach is the increased efforts required by the instructional team to provide the additional feedback, especially considering their own limited resources.

Once the expectations have been managed, the focus of the institution shifts to the satisfaction of the students enrolled in the online courses. This includes timely feedback, clear instructions, well-organized content, and fair assessments. Essentially, if the key to retaining students lies in institutions taking a more customer-centred approach to their operations, perhaps the models and theories that attempt to describe student behaviour in undergraduate attrition in online courses should incorporate measures that are more in-line with customer retention. After all,

the institution is selling a service (education) to a client (student). It is therefore important that the student is satisfied with the service they have purchased otherwise they can, and will, seek it elsewhere.

Therefore, educational institutions who are truly concerned about retaining their students may want to consider additional actions such as offering faculty training to improve online teaching techniques and introducing a reward system as an added incentive to get instructors actively involved in improving the retention rates in their courses. Anderson (2008) proposes techniques to enhance the teaching presence in online courses by focusing on their design and organization, the facilitation of discourse amongst all participants, and the provision of subject-matter expertise through direct instruction. Grayson and Grayson (2003) suggest exploring other possibilities by institutions to improve their retention rates through academic advising, student affairs programs, and enrolment management.

## **Future Research**

As this was an exploratory study, not only did it serve to answer the research questions, but the results also helped formulate new ones for future studies.

One of the more interesting findings that emerged from this dissertation that warrants additional attention involves the attrition of students enrolled full-time in five courses who may consider their online course to be “expendable”. The fate of students enrolling in the online course as their fifth course is of particular interest, especially with regards to their initial expectations about the online experience (i.e., they do not consider it a “real” course because it is online). Similarly, the attrition rate among students enrolled in two courses seemed abnormally high compared to other part-time students, and one must wonder if this is a function of their adding an online course rather than a second classroom-based course, thinking that it will be an easier option.

The fact that the online courses investigated in this study mostly served as elective courses for the students brings forth another possible avenue for future research. If the online course was required by the student to complete or to enter a programme of study, would the retention rates differ with that of elective courses? Would the factors that lead to discontinuing a course that is required to graduate be the same as the ones for courses that can be replaced?

Another possible option for future research could involve investigating the negative relationship between socio-economic status and attrition, especially as it pertains to the education level of the mothers of male students. The notion that students leave school because of the financial burden of attending said institution was brought into question in this dissertation. In particular, it was found that students are less likely to drop out because they cannot afford to continue in school, and more apt to discontinue a course because they can afford to do so.

Future studies could also differentiate between students who voluntarily drop out and those who stop out, also known as “passive dropouts” (Simpson, 2003). In this study, drop out was defined as a voluntary action taken during a particular time period. This means that certain students who did not officially withdraw from the course were considered to have persisted despite the fact that they were inactive throughout the semester. Isolating the characteristics of those particular students and comparing them to those who withdrew may yield diverging results (Stratton, O’Toole, & Wetzel, 2008).

The factors that have been identified as being associated with higher attrition rates stemmed from data collected from students enrolled in online courses. Since this dissertation suggested the fact that these students do not differ from those enrolled in classroom-based courses, one must wonder what factors, if any, are unique to the online environment. In other words, are the demographics, attitudes, and behaviours of the students who eventually drop out of their online course similar to the factors that lead to dropout in the traditional classroom environment? For example, Johnson and Buck (1995) found that of the reasons given by students who dropped

out after their first year of university, half were classified as being personal and financial problems, whereas 20% were attributed to the institution.

The weekly surveys provided additional data that was not used in this dissertation. Consequently, the relationship between this longitudinal instrument and the survival analysis of the enrolment data was not fully explored. Future studies could use this instrument to focus on the changes in the behaviours and attitudes of students enrolled in individual courses.

Finally, this dissertation presents a framework for the study of retention in online courses using a multi-analytic approach. Can this same framework be applied to other settings (i.e., classroom-based courses, workplace training, synchronous environments, graduate-level courses, online programmes, high schools, etc...) to study the attrition phenomenon? Although the focus of this dissertation was on undergraduate asynchronous online courses, it is understood that retention has been, and continues to be, a topic of concern throughout academia.

A better understanding of why individuals are unable or unwilling to complete or continue their education will provide decision-makers with additional tools to design more effective instruction, provide additional resources and timely support, and ultimately, improve retention rates at all levels of schooling. Though the current study addressed attrition within a sample of undergraduate elective courses, it is reasonable to suppose that the same methods could be used to investigate the dynamics of other settings.

## **Rethinking the Role of the Institution**

As mentioned in the literature review, Powell et al. (1990) pinpointed three particular categories that they believed represented the variables that contributed to retention in distance education: the learner's pre-entry variables (i.e., gender, socioeconomic status), their "life changes" (i.e., non-academic commitments, unexpected events), and institutional variables. While the first two categories are not influenced by the educational institution, the third

category presents opportunities for the involvement of educational professionals in affecting retention.

Although Powell et al. (1990) concluded that the pre-entry characteristics of the learner have the greatest influence on their decision to persist in their studies, this does not preclude the institution from having a significant impact on the retention rate of its students. In contrast to what previous studies have concluded, this dissertation has highlighted the fact that the educational institution has a considerable role to play in curtailing dropout behaviour among its constituents.

In the Exit Survey, students attributed the initial or “primary” blame for dropping out of the online course on themselves in two-thirds of the cases. This means that one out of three of the students who dropped out of their online course attributed the major blame for their voluntary withdrawal, justifiably or not, on the institution. In addition, of all the reasons that were listed by the students for their non-persistence, over 40% were classified as being within the sphere of influence of the educational institution. If the role of the educational institution in curtailing attrition is acknowledged, the attention should shift to identifying where and when its intervention can have the most effective results.

Although Powell et al. (1990) and Garland (1993) do concede a certain value to institutional barriers of persistence, its importance in affecting retention in online courses is undermined by the focal point traditionally being on the individual. For instance, in the case of Garland’s categories, all institutional factors are lumped into a single category, whereas three are devoted to the individual characteristics of the learners. Moreover, as was uncovered in this dissertation, certain barriers that would normally be attributed to the learner turned out to be influenced by the institution when students were asked to elaborate on their reasons for dropping out.

Conglomerating the numerous factors that can be influenced by the institution into one category also masks the influence of the different actors that are involved at the institutional



level (i.e., instructors, instructional designers, administrative assistants, educational administrators, etc...). Therefore, it is suggested that the barriers to persistence in online courses be redefined to better reflect the actual role that institutions can play in retaining its students in online courses.

To do so, institutional barriers should be segregated into additional categories to identify the potential actors: administrators, instructional designers, and the instructional/service team. In addition, the student characteristics, which are not influenced by the institution, can be grouped into variables that can be affected by the individual learner (i.e., habits, knowledge, attitude), and those in which they have less control (i.e., work, family, unexpected events). In other words, the reasons for dropping out that would have normally been categorized by Garland (1993) as dispositional barriers would represent internal factors, and those which would normally be classified as situational barriers would be considered external factors for the students. The issues that would normally be sorted as epistemological barriers would forthwith be segregated as either an internal barrier, or one of the institutional barriers, depending on the actual complaint.

It is therefore proposed that the factors cited by the students as reasons for dropping out of their online courses be separated into one of the following categories:

- **Administrative (institution):** these are factors that prove to be reasons for dropping out, regardless of the mode of delivery, due to policies and practices that have been established by the accrediting academic institution. Examples could include problems with registration (late registration), issues with transferring credits, poor academic advising (allowing the student to enrol in the course despite the fact that they do not have the necessary prerequisites), and other bureaucratic issues that affect students at the university as a whole.
- **Internal (student):** encompasses factors that can be altered and controlled by the student in order to persist in their online course. This would include a lack of motivation,

low self-efficacy and/or self-confidence, unwillingness or inability to adapt, poor time management skills, disinterest in the subject matter, subpar study strategies, conflict in learning style, poor performances, or a lack of the skills needed to learn in this environment.

- **Design (institution):** these factors are associated with the way that the course content is designed, developed, and presented. This category would include all instructional design issues such as information overload, how the students are assessed, and the aesthetics of the course website, including the use (or lack of) multimedia and interactive features.
- **External (student):** this category consists of factors that are typically caused by commitments and influences that are beyond academics, and often more difficult for students to influence. This includes changes in work and family responsibilities, health problems, personal problems, and other unpredictable life circumstances.
- **Service (institution):** the factors in this category would include any front-line problems that can be identified as being caused by poor “customer service”. This includes a lack of timely or constructive feedback (to questions about procedure or content), frustrations caused by an inability to access the course content (due to login problems), issues with the instructional team, and a mismatch in expectations and experience because of a misrepresentation of the service.

By separating the reasons for departure from an online course into one of these categories, an institution is better suited to identify where they can play a role in resolving retention problems. In other words, as suggested by the acronym “AIDES” (which is inspired by the conjugated French phrase “*Tu aides*”, meaning to help), the focus of this exercise is on how an institution can help decrease attrition through its own practices as opposed to simply identifying students who exhibit certain characteristics that may or may not lead to drop out.

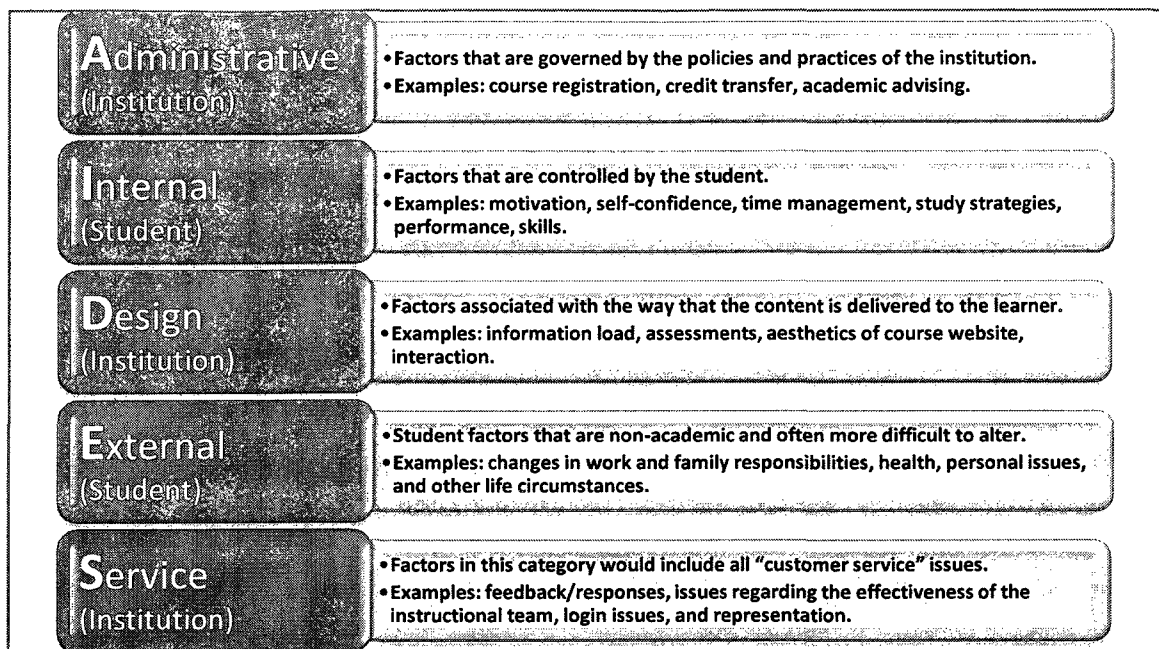


Figure 61. The AIDES Taxonomy for Online Course Dropout

## Closing Remarks

The goal of this dissertation was not to establish of a comprehensive theory or model of retention in online courses, but rather to find more efficient ways to identify and take practical steps to rectify attrition within one's own institution. By addressing dropout at the earliest possible stage (the individual course), and at the most influential level (the student), one can hope to proactively curtail the behaviour as opposed to conducting a *post mortem*. This dissertation therefore suggests using a bottom-up approach to solving retention problems, and in so doing, involving students themselves in the process.

Based on the previous literature and the changing demographics of the students enrolling in higher education, the initial assumption about non-traditional students was that they were no longer a factor in online courses. In fact, in the context of this research setting, it was expected that students who were habitually identified as non-traditional were now part of the fabric of the regular student population. Rather, it was found that non-traditional students were still ubiquitous at the university, but were shrouded in the quagmire of traditional students. The

echo boom effect in North America is likely one of the reasons why the focus of post-secondary institutions has been on catering to the needs of the younger students, as opposed to the greater awareness that is being attributed to older students in other parts of the world.

In essence, students who were enrolled in the mature entry programme, who typically encompass the characteristics synonymous with non-traditional students, exhibited attrition rates that were much higher than students in other programmes. However, since they had been absorbed into an environment dominated by younger, academically stronger, full-time students, they no longer symbolized the online learning clientele. Consequently, their particular needs and issues are lost amid the masses and the institution loses sight of the individuals who are most likely to require their help to persist in the online course. This dissertation suggests that non-traditional students and other sub-cultures of students who are more prone to dropping out may still be present, but buried as a minority among the student population. The individual characteristics that are associated to higher attrition rates may prove to be a factor on their own, but it is rather an amalgamation of these factors, many of which are interrelated, that hinder one's chances of surviving in their online course.

But demographics can only tell a part of the story. For instance, the information that is gathered from registration databases cannot explain why a student dropped out of a given course. Unless the students are directly involved in the research, in particular the ones who voluntarily withdrew from their course, any conclusions about why they dropped out would be pure speculation on the researcher's part. Ideally, data should be collected as early as possible from students currently enrolled in the course in order to determine if they are at-risk of dropping out. By using a "distant early warning" system, educational professionals will be better equipped to intervene to retain the students in current courses, as opposed to waiting until they have dropped out to find out what went wrong.

Although students who are considering dropping out of a course are more likely to follow through with this action, this dissertation suggests that a large proportion of the students can

and will change their minds throughout the semester. The dropout decision is far from an instantaneous one as students evaluate and re-evaluate their commitment level to the course regularly. This means that the decision to discontinue does not necessarily lead to concrete action, thereby presenting a potential opportunity for the institution to influence the dropout decision.

Due to the nature of the courses offered online at Concordia, the student's survival in the course is ultimately a function of their academic integration. The more they participate in the discussions, submit their assignments, complete the quizzes, and perform any other type of cognitive investment in the course, the higher their retention rate. Therefore, the earlier they get involved in the course, the more chance that they will make additional investments in it, and the better their chance of persisting. In addition, the sooner a student who is not participating in the course is identified, the more time the institution has to intervene in hopes of reining them in.

Ultimately, it is not the fear of failure that is causing the students to drop out of the online course, but rather the concern that their performance will hinder their grade point average. The decision to drop out weighs one's current academic integration in the course (e.g., investments, performance-to-date) relative to future efforts needed in order to achieve a suitable grade. This dissertation proposes that students who are unwilling or incapable of making the necessary investments in the course to achieve a particular standard will be more likely to drop out of it, especially if their energy can be devoted to a more important course or commitment.

All three approaches that have traditionally been used to study the retention phenomenon in distance education, as proposed by Morgan and Tam (1999), have been employed in some capacity in this dissertation:

1. *The students were classified and compared according to certain characteristics to ascertain differences between those who persist and those who drop out.* This was done

using statistical analyses on the data gathered from the WBLQ and the registration database.

2. *The retention rates of the individual courses were compared and contrasted in an attempt to identify differences between them.* This was accomplished using the registration data from the individual courses, the weekly survey, the grade sheets, and combined with the information provided in the course outlines.
3. *The students who dropped out were surveyed to find out what caused them to come to this decision.* This was carried out using the Exit Survey and the course evaluation.

In adding to this list, this dissertation proposes the use of survival analysis to determine when during the semester students are most likely to drop out of their online course. Not only did this statistical methodology validate the results of the descriptive statistical analyses of the registration data, but when combined with the course schedule, it also provided insight as to the reasons why students would drop out of the course without needing to interview them directly. By matching the periods of higher hazard rates in the individual courses with their academic schedule, one can infer some of the underlying factors involved in the exodus of the students. Therefore, survival analysis represents an additional weapon in the retention research arsenal.

But despite all of these weapons to combat attrition, one must realize that not all drop out is bad. For some students, leaving the course is a necessity because of a change in their priorities. For others, perhaps they have already achieved their goal in the course and did not find it necessary to continue.

Notwithstanding this, in the majority of cases, drop out is preventable. Ideally, students should be able to recognize within the first two weeks if the course is to their satisfaction. As customers, this is akin to a return policy. The onus is on the client to test drive the product. If they are not satisfied with it within the trial period, they simply return it without penalty. Otherwise, it is assumed that they have committed to the product. Either way, the institution

plays a key role throughout this process by ensuring that the customer support is timely and effective. In essence, they want to ensure customer satisfaction.

In this commercialized and competitive era of education, students are no longer subjects that must rely on and conform to the institution. Rather, they must be treated as clients who help shape how services are to be delivered and how product is to be designed. As is the case in any open market, institutions must compete for their business. Recruiting and retaining the clients is therefore a matter of institutional survival as satisfied customers will be more likely to enrol in additional courses and encourage fellow students to join them through word-of-mouth recommendations (Kondra, Huber, Michalczuk, & Woudstra, 2008). The major difference, however, is that in the business world, the loss of a client is bemoaned, whereas in this setting, their loss is collectively celebrated...given that they are "lost" because they graduated.

## REFERENCES

- Acemian, N., Devey, P. L., & Schmid, R. (2006). An analysis of study behaviour and performance in a blended learning undergraduate programming course. *Teachers College Record*. Retrieved June 26, 2007, from <http://www.tcrecord.org/Content.asp?ContentID=12473>.
- Agresti, A., & Finlay, B. (2009). *Statistical methods for the social sciences* (4th ed.). Upper Saddle River, New Jersey: Pearson-Prentice-Hall.
- Allen, E. I., & Seaman, J. (2006). *Making the grade: Online education in the United States, 2006*. Needham, MA: The Sloan Consortium.
- Allen, E. I., & Seaman, J. (2007). *Online nation: Five years of growth in online learning*. Needham, MA: The Sloan Consortium.
- Ally, M. (2004). Foundations of educational theory for online learning. In T. Anderson and F. Elloumi (Eds.). *Theory and practice of online learning* (pp. 3-31). Athabasca University. Retrieved May 31, 2006, from [http://cde.athabascau.ca/online\\_book/index.html](http://cde.athabascau.ca/online_book/index.html).
- Anderson, T. (2003). Getting the mix right again: An updated and theoretical rationale for interaction. *International Review of Research in Open and Distance Learning*, 4(2). Retrieved May 7, 2006, from <http://www.irrodl.org/index.php/irrodl/article/view/149/708>.
- Anderson, T. (2008). Teaching in an online learning context. In T. Anderson (Ed.), *Theory and practice of online learning* (2nd ed.) (pp. 343-365). Athabasca University. Retrieved August 28, 2008, from [http://www.aupress.ca/books/Terry\\_Anderson.php](http://www.aupress.ca/books/Terry_Anderson.php).
- AUCC (2007). *Trends in higher education: Volume 1- Enrolment*. Ottawa, Ontario: Association of Universities and Colleges of Canada. Retrieved June 26, 2007, from [http://www.aucc.ca/\\_pdf/english/publications/trends\\_2007\\_vol1\\_e.pdf](http://www.aucc.ca/_pdf/english/publications/trends_2007_vol1_e.pdf).
- Astin, A. W. (1964). Personal and environmental factors associated with college dropouts among high aptitude students. *Journal of Educational Psychology*, 55(4), 219-227.
- Astin, A. W. (1972). *College dropouts: A national profile*. Washington, D.C.: American Council on Education.



- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518-529.
- Astin, A. W. (1997). How "good" is your institution's retention rate? *Research in Higher Education*, 38(6), 647-658.
- Attinasi, L. C. (1992). Rethinking the study of the outcomes of college attendance. *Journal of College Student Development*, 33, 61-70.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychology Review*, 84, 191-215.
- Bean, J. P. (1980). Dropouts and turnover: The synthesis and test of a causal model of student attrition. *Research in Higher Education*, 12(2), 155-187.
- Bean, J. P. (1982). Student attrition, intentions, and confidence: Interaction effects in a path model. *Research in Higher Education*, 17(4), 291-320.
- Bean, J. P., & Eaton, S. B. (2000). The psychology underlying successful retention practices. *Journal of College Student Retention: Research, Theory, and Practice*, 3(1), 73-89.
- Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55(4), 485-540.
- Belawati, T. (1998). Increasing student persistence in Indonesian post-secondary distance education. *Distance Education*, 19(1), 81-108.
- Bennett, S., Maton, K., & Kervin, L. (2008). The "digital natives" debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.
- Berge, Z. L., & Mrozowski, S. (2001). Review of research in distance education, 1990-1999. *The American Journal of Distance Education*, 15, 1-15.
- Berge, Z. L., & Huang, Y. (2004). A model for sustainable student retention: A holistic perspective on the student dropout problem with special attention to e-learning, *DEOSNEWS*, 13(5). Retrieved June 10, 2007, from [http://www.ed.psu.edu/acsde/deos/deosnews/deosnews13\\_5.pdf](http://www.ed.psu.edu/acsde/deos/deosnews/deosnews13_5.pdf).
- Berger, J. B., & Braxton, J. M. (1998). Revising Tinto's interactionalist theory of student departure through theory elaboration: Examining the role of organizational attributes in the persistence process. *Research in Higher Education*, 39(2), 103-119.

- Berger, J. B., & Milem, J. F. (1999). The role of student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education*, 40(6), 641-664.
- Bernard, R. M., & Amundsen, C. L. (1989). Antecedants to dropout in distance education: Does one model fit all? *Journal of Distance Education*, 4(2), 25-46.
- Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallett, P. A., Fiset, M., & Huang, B. (2004a). How does distance education compare to classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439.
- Bernard, R. M., Brauer, A., Abrami, P. C., & Surkes, M. (2004b). The development of a questionnaire for predicting online learning achievement. *Distance Education*, 25(1), 31-47.
- Bers, T. H. (1986). Confidence, commitment, and academic performance and retention of community college students. *Community College Journal of Research and Practice*, 10(1), 35-57.
- Bertrand, L., Demers, L., & Dion, J. (1994). Contrer l'abandon en formation à distance: expérimentation d'un programme d'accueil aux nouveaux étudiants à la Télé-université. *Journal of Distance Education*, 9(2), 49-63.
- Biner, P. M., Dean, R. S., & Mellinger, A. E. (1994). Factors underlying distance learner satisfaction with televised college-level courses. *The American Journal of Distance Education*, 8(1), 60-71.
- Bleed, R. (2005). Overcoming the biggest barrier to student success. *Campus Technology*, May 2005. Retrieved October 24, 2006, from <http://www.campustechnology.com/article.aspx?aid=40248>.
- Borden, V. M. (1995). Segmenting student markets with a student satisfaction and priorities survey. *Research in Higher Education*, 36(1), 73-88.
- Boshier, R. W. (1971). Motivational orientations of adult education participants: A factor-analytic exploration of Houle's typology. *Adult Education Journal*, 21, 3-26.

- Boshier, R. W. (1972). The development and use of a dropout prediction scale. *Adult Education*, 22, 87-99.
- Braxton, J. M., & Brier, E. M. (1989). Melding organizational and interactional theories of student attrition: A path analytic study. *Review of Higher Education*, 13(1), 47-61.
- Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (Eds.). (2004). *Understanding and reducing college student departure* (Vol. 30). ERIC.
- Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *The Journal of Higher Education*, 71(5), 569-590.
- Braxton, J. M., Sullivan, A. S., & Johnson, R. (1997). Appraising Tinto's theory of college student departure. In J. Smart (Ed.), *Higher education: Handbook of theory and research*, vol. 12 (pp. 107-164). New York: Agathon.
- Brindley, J. E. (1995). Learners and learner services: The key to the future in open distance learning. In J. M. Roberts and E. M. Keough (Eds.), *Why the information highway: Lessons from open and distance learning* (pp. 102-125). Toronto: Trifolium Books Inc.
- Butlin, G. (2000). Determinants of university and community college leaving. *Education Quarterly Review*, 6(4), 8-23. Ottawa, Ontario: Statistics Canada.
- Cabrera, A. F., Stampen, J., & Hansen, W. (1990). Exploring the effects of ability to pay on persistence in college. *Review of Higher Education*, 13, 306-336.
- Cabrera, A. F., Castaneda, M. B., Nora, A., & Hengstler, D. (1992). The convergence between two theories of college persistence. *The Journal of Higher Education*, 63(2), 143-164.
- Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *The Journal of Higher Education*, 64(2), 123-139.
- Carliner, S. (2004). *An overview of online learning* (2nd ed.). Amherst, MA: HRD Press.
- Carr, S. (2000). As distance education comes of age, the challenge is keeping the students, *The Chronicle of Higher Education*. Retrieved October 24, 2006, from <http://chronicle.com/free/v46/i23/23a00101.htm>.

- Chase, C. I. (1970). The college dropout: His high-school prologue. *Bulletin of the National Association of Secondary School Principals*, 54, 66-71.
- Chickering, A. W., & Reiser, L. (1993). *Education and identity*. San Francisco, CA: Jossey-Bass.
- Chyung, Y. (2001). Systematic and systemic approaches to reducing attrition rates in online higher education. *The American Journal of Distance Education*, 15(3), 36-49.
- Chyung, Y., Winiecki, D. J., & Fenner, J. A. (1998). A case study: Increase enrollment by reducing dropout rates in adult distance education. In *Distance Learning '98: Proceedings of the 14<sup>th</sup> annual conference on distance teaching & learning*, Madison, WI. August 5-7, 1998.
- Coggins, C. C. (1988). Preferred learning styles and their impact on completion of external degree programmes. *The American Journal of Distance Education*, 2(1), 25-37.
- Concordia University (2008). Concordia University enrolment database. Montréal, Québec: Author. Retrieved February 11, 2008, from <http://my.concordia.ca>.
- Conklin, K. (1997). Course attrition: A 5-year perspective on why students drop classes. *Community College Journal of Research and Practice*, 21(8), 753-760.
- Cope, R. G., & Hannah, W. (1975). *Revolving college doors: The causes and consequences of dropping out, stopping out, and transferring*. New York: Wiley.
- CREPUQ (2004). Questions and answers on the college R score. Montréal, Québec: Author. Retrieved June 26, 2007, from [http://www.crepuq.qc.ca/documents/adm/CRC\\_ENGLISH/R\\_Score\\_FAQ\\_April04.pdf](http://www.crepuq.qc.ca/documents/adm/CRC_ENGLISH/R_Score_FAQ_April04.pdf).
- Cox, D. R. (1972). Regression models and life tables. *Journal of Royal Statistical Society Series B*, 74, 187-220.
- Daniel, J. S., & Marquis, C. (1979). Interaction and independence: Getting the mixture right. *Teaching at a Distance*, 14, 29-44.
- Daniel, J. S. (1996). The essentials of distance education. In J. S. Daniel (Ed.), *Mega-universities and knowledge media: Technology strategies for higher education* (pp. 46-67). London: Kogan Page.
- Davis, J. A. (1966). The campus as a frog-pond: An application of the theory of relative deprivation to career decisions of college men. *American Journal of Sociology*, 72, 17-31.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.

- DesJardins, S. L., Ahlburg, D. A., & McCall, B. P. (1999). An event history model of student departure. *Economics of Education Review*, 18(3), 375-390.
- Devey, P. L. (2006). Factoring in the demographics: Why comparative studies on online retention are limited. Unpublished Manuscript, Concordia University, Montreal, Canada.
- Dey, E. L., & Astin, A. W. (1993). Statistical alternatives for studying college student retention: A comparative analysis of logit, probit, and linear regression. *Research in Higher Education*, 34(5), 569-581.
- Diaz, D. P. (2002). Online drop rates revisited. *The Technology Source*, May/June 2002. Retrieved October 24, 2006, from [http://technologysource.org/article/online\\_drop\\_rates\\_revisited/](http://technologysource.org/article/online_drop_rates_revisited/).
- Dickey, M. (2004). The impact of web-logs (blogs) on student perceptions of isolation and alienation in a web-based-distance learning environment. *Open Learning*, 19(3), 279-291.
- Dielman, T. (2001). Applied regression analysis for business and economics (3rd ed.). Pacific Grove, CA: Duxbury-Thomson Learning.
- Dille, B., & Mezack, M. (1991). Identifying predictors of high risk among community college telecourse students. *The American Journal of Distance Education*, 5(1), 24-35.
- Dupin-Bryant, P. A. (2004). Pre-entry variables related to retention in online distance education. *The American Journal of Distance Education*, 18(4), 199-206.
- Durkheim, E. (1951). *Suicide*. Translated by J. A. Spaulding and G. Simpson. Glencoe: The Free Press. Originally published as *Le suicide: Etude de sociologie*. Paris: Felix Alcan, 1897.
- Efron, B. (1988). Logistic regression, survival analysis, and the Kaplan-Meier curve. *Journal of the American Statistical Association*, 83, 414-425.
- Finkelstein, D. M. (1986). A proportional hazards model for interval-censored failure time data. *Biometrics*, 42(4), 845-854.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fowler, F. J. (1993). *Survey research methods*. Newbury Park, CA: Sage Publication.
- Frankola, K. (2001). Why online learners drop out. *Workforce*, 80(10), 53-59.

- Gagne, R. (1985). *The conditions of learning* (4th ed.). New York: Holt, Rinehart & Winston
- Garland, M. R. (1993). Student perceptions of the situational, institutional, dispositional, and epistemological barriers to persistence. *Distance Education*, 14(2), 181-198.
- Garrison, D. R. (1987). Self-directed and distance learning: Facilitating self-directed learning beyond the institutional setting. *International Journal of Lifelong Education*, 6(4), 309-318.
- Gilbert, S. (1991). *Attrition in Canadian universities: Research report to the commission of inquiry on Canadian university education*. Association of University and Colleges of Canada: Ottawa, Canada.
- Gottmann, J. M., & Rushe, R. H. (1993). The analysis of change: Issues, fallacies, and new ideas. *Journal of Consulting and Clinical Psychology*, 61(6), 907-910.
- Grayson, J. P., & Grayson, K. (2003). *Research on retention and attrition*. Montreal, Québec: The Canadian Millennium Scholarship Foundation.
- Grow, G. O. (1996). Teaching learners to be self-directed. *Adult Education Quarterly*, 41(3), 125-149.
- Hango, D., & de Broucker, P. (2007). *Postsecondary enrolment trends to 2031: Three scenarios*. Ottawa, Ontario: Statistics Canada.
- Hara, N., & Kling, R. (1999). Students' difficulties in a web-based distance education course: An ethnographic study. In W. Dutton and B. D. Loades (Eds.), *Digital academe: The new media and institutions of higher education and learning*. New York: Routledge.
- Harrison, N. (2006). The impact of negative experiences, dissatisfaction and attachment on first year undergraduate withdrawal. *Journal of Further and Higher Education*, 30(4), 377-391.
- Hill, J. R., & Raven, A. (2000). Online learning communities: If you build them, will they stay? Instructional Technology Forum. Retrieved May 7, 2007, from <http://it.coe.uga.edu/itforum/paper46/paper46.htm>.
- Horn, L. J., Berger, R., & Carroll, C. D. (2004). *College persistence on the rise? Changes in a 5-year degree completion and postsecondary persistence rates between 1994 and 2000*.

- Washington, D.C.: U.S. Department of Education Office of Educational Research and Improvement.
- Horn, L. J., & Carroll, C. D. (1998). *Stopouts or stayouts? Undergraduates who leave college in their first year*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
- Horn, L. J., & Premo, M. D. (1995). *Profile of undergraduates in U.S. postsecondary education institutions: 1992-93*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
- Jegade, O., & Kirkwood, J. (1994). Student anxiety in learning through distance education. *Distance Education, 15*(2), 279-290.
- Jensen, E. L. (1981). Student financial aid and persistence in college. *The Journal of Higher Education, 52*(3), 280-294.
- Johnson, G. M., & Buck, G. H. (1995). Students' personal and academic attributions of university withdrawal. *Canadian Journal of Higher Education, 25*(2), 53-77.
- Jun, J. (2005). Understanding e-dropout. *International Journal on E-Learning, 4*(2), 229-240.
- Kalbfleisch, J. D., & Prentice, R. L. (1980). *The statistical analysis of failure time data*. New York: Wiley.
- Kaplan, E. L., & Meier, P. (1958). Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association, 53*, 457-481.
- Keegan, D. (1996). Definition of distance education. In D. Keegan (Ed.), *Foundations of distance education* (3rd ed.). London: Routledge.
- Keller, J. M. (1979). Motivation and instructional design: A theoretical perspective. *Journal of Instructional Development, 2*(4), 26-34.
- Keller, J. M. (1987). Development of the ARCS model of instructional design. *Journal of Instructional Development, 10*(3), 2-10.
- Keller, J. M., & Litchfield, B. C. (2002). Motivation and performance. In R. A. Reiser and J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (pp. 83-98). Upper Saddle River, NJ: Merrill.

- Kember, D. (1989). A longitudinal-process model of drop-out from distance education. *The Journal of Higher Education*, 60(3), 278-301.
- Keppel, G., & Wickens, T. D. (2004). *Design and analysis: A researcher's handbook* (4th ed.). New Jersey: Pearson Education, Inc.
- Kerka, S. (1996). Distance learning, the internet, and the World Wide Web. *ERIC Digest*. ERIC Document Reproduction Service No. ED 395 214. Retrieved July 11, 2006, from [http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/14/84/59.pdf](http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/14/84/59.pdf).
- Khan, B. H. (1997). Web-based instruction (WBI): What is it and why is it? In B. H. Khan (Ed.), *Web-based instruction* (pp. 5-18). Englewood Cliffs, NJ: Educational Technology Publications.
- Khan, B. H., & Vega, R. (1997). Factors to consider when evaluating a web-based instruction course: A survey. In B. H. Khan (Ed.), *Web-based instruction* (pp. 375-378). Englewood Cliffs, NJ: Educational Technology Publications.
- Kirkpatrick, D. L. (1979). Techniques for evaluating training programs. *Training and Development Journal*, 178-192.
- Knowles, E. S. (1983). Social physics and the effects of others: Tests of the effects of audience size and distance on social judgments and behavior. *Journal of Personality and Social Psychology*, 45(6), 1263-1279.
- Ko, S., & Rossen, S. (2004). *Teaching online: A practical guide* (2nd ed.). New York: Houghton Mifflin Company.
- Kondra, A. Z., Huber, C., Michalczuk, K., & Woudstra, A. (2008). Call centres in distance education. In T. Anderson (Ed.), *Theory and practice of online learning* (2nd ed.) (pp. 367-395). Athabasca University. Retrieved August 28, 2008, from [http://www.aupress.ca/books/Terry\\_Anderson.php](http://www.aupress.ca/books/Terry_Anderson.php).
- Lavin, D. (1965). *The prediction of academic performance*. New York: Russel Sage Foundation.
- Levy, Y. (2007). Comparing dropouts and persistence in e-learning courses. *Computers & Education*, 48, 185-204.



- Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance learners. *The American Journal of Distance Education, 15*(2), 41-51.
- Lindsay, N. K., Howell, S. L., & Laws, R. D. (2005). Completion rates and distance learners, *Encyclopaedia of Distance Learning*. Retrieved July 11, 2006, from [http://reference.igi-online.com/downloadPDF/encyclopedias/IGR0602\\_30FLPW0ccO.pdf](http://reference.igi-online.com/downloadPDF/encyclopedias/IGR0602_30FLPW0ccO.pdf).
- Liu, Y., Lavelle, E., & Andris, J. (2002). Experimental effects of online instruction on locus of control. *USDLA Journal, 16*(6), 63-70.
- Lorenzo, G., & Moore, J. C. (2002). *The Sloan consortium report to the nation: Five pillars of quality online education*. Needham, MA: The Sloan Consortium.
- Mabrey, V. (2004). Diplomas for sale. Retrieved May 7, 2007, from <http://www.cbsnews.com/stories/2004/11/08/60II/main654319.shtml>.
- Maddux, C. D., Ewing-Taylor, J., & Johnson, D. L. (2003). The light and dark sides of distance education. In C.D. Maddux, J. Ewing-Taylor, and D. L. Johnson (Eds.), *Distance education: Issues and concerns*. Philadelphia, PA: Haworth Press.
- Mallette, B. I., & Cabrera, A. F. (1991). Determinants of withdrawal behavior: An exploratory study. *Research in Higher Education, 32*(2), 179-194.
- Mayfield, K. (2002). Down by the diploma mills stream. *Wired Magazine*. Retrieved October 23, 2006, from <http://www.wired.com/culture/education/news/2002/08/54596>.
- McClelland, D. (1961). *The achieving society*. Princeton, NJ: Van Nostrand Co.
- McLaughlin, G. W., Brozovsky, P. V., & McLaughlin, J. S. (1998). Changing perspectives on student retention: A role for institutional research. *Research in Higher Education, 39*(1), 1-17.
- Metzner, B. S., & Bean, J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in Higher Education, 27*(1), 15-37.
- Meyer, J. W. (1970). High school effects on college intentions. *The American Journal of Sociology, 76*(1), 59-70.

- Moore, K., Bartkovich, J., Fetzner, M., & Ison, S. (2002). Success in cyberspace: Student retention in online courses, *Annual Forum for the Association for Institutional Research*. Toronto, Ontario, Canada.
- Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view*. Belmont, CA: Wadsworth.
- Moore, M. G., & Thompson, M. M. (1990). The effects of distance learning: A summary of literature. (Vol. Research Monograph Number 2.). Retrieved October 23, 2006, from [http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/22/d9/f9.pdf](http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/22/d9/f9.pdf).
- Morgan, C. K., & Tam, M. (1999). Unravelling the complexities of distance education student attrition. *Distance Education*, 20(1), 96-108.
- Munro, B. H. (1981). Dropouts from higher education: Path analysis of a national sample. *American Educational Research Journal*, 18(2), 133-141.
- Nelson, J. I. (1972). High school and college plans: The impact of social status on aspirations. *American Sociological Review*, 37(2), 143-148.
- Noble, D. F. (2002). Digital diploma mills. In P. Mirowski (Ed.), *Science bought and sold: Essays in the economics of science* (pp. 431-443). Chicago: University of Chicago Press.
- Nora, A., Attinasi, L. C., & Matonak, A. (1990). Testing qualitative indicators of precollege factors in Tinto's attrition model: A community college perspective. *Review of Higher Education*, 13(3), 337-356.
- Okun, M. A., Benin, J., & Williams, A. (1996). Staying in college. *Journal of Higher Education*, 67(5), 576-596.
- Okun, M. A., Ruehlman, L., & Karoly, P. (1991). Application of investment theory to predicting part-time community college student intent and institutional persistence/departure behavior. *Journal of Educational Psychology*, 83(2), 212-220.
- Osborn, V. (2001). Identifying at-risk students in videoconferencing and Web-based distance education. *The American Journal of Distance Education*, 15(1), 41-54.
- Packham, G., Jones, G., Miller, C., & Thomas, B. (2004). E-learning and retention: Key factors influencing student withdrawal. *Education & Training*, 46(6/7), 335-342.

- Palloff, R., & Pratt, K. (2001). *Lessons from the cyberspace classroom: The realities of online teaching*. San Francisco, CA: Josey-Bass.
- Pantages, T. J., & Creedon, C. F. (1978). Studies in college attrition: 1950 - 1975. *Review of Educational Research*, 48(1), 49-101.
- Parker, A. (1999). A study of variables that predict dropout from distance education. *International Journal of Educational Technology*, 1(2), 1-12.
- Parker, A. (2003). Identifying predictors of academic persistence in distance education. *USDLA Journal*, 17(1), 55-62.
- Pascarella, E. T., & Chapman, D. W. (1983). A multiinstitutional, path analytic validation of Tinto's model of college withdrawal. *American Educational Research Journal*, 20(1), 87-102.
- Pascarella, E. T., & Terenzini, P. T. (1977). Patterns of student-faculty informal interaction beyond the classroom and voluntary freshman attrition. *The Journal of Higher Education*, 48(5), 540-552.
- Pascarella, E. T., & Terenzini, P. T. (1979). Interaction effects in Spady and Tinto's conceptual models of college attrition. *Sociology of Education*, 52(4), 197-210.
- Pascarella, E. T., & Terenzini, P. T. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. *Journal of Higher Education*, 51(1), 60-75.
- Pascarella, E. T., & Terenzini, P. T. (1983). Predicting voluntary freshman year persistence/withdrawal behavior in a residential university: A path analytic validation of Tinto's model. *Journal of Educational Psychology*, 75(2), 215-226.
- Peto, R. & Peto, J. (1972). Asymptotically efficient rank invariant procedures. *Journal of the Royal Statistical Society*, A35, 185-207.
- Porter, S. R. (1999). Viewing one-year retention as a continuum: The use of dichotomous logistic regression, ordered logit, and multinomial logit. *39th Annual Forum of the Association for Institutional Research*. Seattle, WA.
- Powell, R., Conway, C., & Ross, L. (1990). Effects of student predisposing characteristics on student success. *Journal of Distance Education*, 5(1). Retrieved October 11, 2006, from [http://cade.athabascau.ca/vol5.1/8\\_powell\\_et\\_al.html](http://cade.athabascau.ca/vol5.1/8_powell_et_al.html).

- Price, J. L. (1977). *The study of turnover*. Ames, IA: Iowa State University Press.
- Rekkedal, T. (1982). The drop-out problem and what to do about it. In J. Daniel, M. Stroud, and J. Thompson (Eds.), *Learning at a distance: A world perspective*. Edmonton, AB: Athabasca University.
- Rekkedal, T. (1985). Introducing the personal tutor/counsellor in the system of distance education, project report 2: Final report. Retrieved May 7, 2007, from [http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/2f/1a/aa.pdf](http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/2f/1a/aa.pdf).
- Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7(1), 68-88.
- Rootman, I. (1972). Voluntary withdrawal from a total adult socializing organization: A model. *Sociology of Education*, 45(3), 258-270.
- Ross, L. R., & Powell, R. (1990). Relationships between gender and success in distance education courses: A preliminary investigation. *Research in Distance Education*, 2(2), 10-11.
- Rossett, A., & Schafer, L. (2003). What can we do about e-dropouts? *Training and Development*, 56(6), 40-46.
- Rotter, J. (1966). Generalized expectations for internal versus external control of reinforcement. *Psychological Monographs*, 80(1), 1-28.
- Rovai, A. P. (2003). In search of higher persistence rates in distance education online programs. *The Internet and Higher Education*, 6, 1-16.
- Rowntree, D. (1995). Teaching and learning online: A correspondence education for the 21st century? *British Journal of Educational Technology*, 26(3), 205-215.
- Schlosser, C. A., & Anderson, M. L. (1994). *Distance education: Review of the literature*. Research Institute for Studies in Education. Retrieved May 4, 2007, from [http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/13/df/c3.pdf](http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/df/c3.pdf).
- Sewell, W. H., & Shah, V. P. (1967). Socioeconomic status, intelligence, and the attainment of higher education. *Sociology of Education*, 40(1), 1-23.

- Shaienks, D., & Gluszynski, T. (2007). *Participation in postsecondary education: Graduates, continuers and drop outs, results from YITS cycle 4*. Ottawa, Ontario: Statistics Canada.
- Sharma, R. C. (2002). Student retention in open and distance learning systems, *15th Annual Conference of the Asian Association of Open Universities*. New Delhi, India.
- Shaw, L. H., & Gant, L. M. (2002). In defence of the internet: The relationship between internet communication and depression, loneliness, self-esteem, and perceived social support. *CyberPsychology & Behavior*, 5(2), 157-171.
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2006). Teaching and learning at a distance: Foundations of distance education (3rd ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Simpson, O. (2003). *Student retention in online, open, and distance learning*. London: Kogan Page.
- Simpson, O. (2004). The impact on retention of interventions to support distance learning students. *Open Learning*, 19(1), 79-95.
- Singer, J. D., & Willett, J. B. (1991). Modeling the days of our lives: Using survival analysis when designing and analyzing longitudinal studies of duration and the timing of events. *Psychological Bulletin*, 110(2), 268-290.
- Singer, J. D., & Willett, J. B. (1993). It's about time: Using discrete-time survival analysis to study duration and the timing of events. *Journal of Educational and Behavioral Statistics*, 18(2), 155-195.
- Skinner, B. F. (1974). *The analysis of behavior: A program for self-instruction*. New York: Random House.
- Smith, P. J., Murphy, K. L., & Mahoney, S. E. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. *Distance Education*, 24(1), 57-67.
- Smith, P. L., & Dillon, C. L. (1999). Comparing distance learning and classroom learning: Conceptual considerations. *The American Journal of Distance Education*, 13(2), 6-23.
- Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange*, 1, 64-85.

- Spady, W. G. (1971). Dropouts from higher education: Toward an empirical model. *Interchange*, 2(3), 38-62.
- Spector, P. E. (2000). *Industrial and organizational psychology: Research and practice* (2nd ed.). New York: John Wiley and Sons.
- Stage, F. K. (1989). Motivation, academic and social integration, and the early dropout. *American Educational Research Journal*, 26(3), 385-402.
- Statistics Canada (2008). University enrolment. *The Daily*, February 7, 2008. Ottawa, Ontario: Author. Retrieved February 9, 2008, from <http://www.statcan.ca/daily/english/080207/d080207a.htm>.
- Stratton, L. S., O'Toole, D. M., & Wetzel, J. N. (2008). A multinomial logit model of college stopout and dropout behavior. *Economics of Education Review*, 27, 319-331.
- Storrings, D. A. (2006). *Attrition in distance education: A meta-analysis*. Unpublished doctoral dissertation, Syracuse University, New York. Retrieved June 21, 2004, from <http://gradworks.umi.com/31/94/3194024.html>.
- Suhre, C. J., Jansen, E. P., & Harskamp, E.G. (2006). Impact of degree program satisfaction on the persistence of college students. *Higher Education*. DOI 10.1007/s10734-005-2376-5.
- Sweet, R. (1986). Student dropout in distance education: An application of Tinto's model. *Distance Education*, 7(1), 68-91.
- Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction*, 4(4), 295-312.
- Terenzini, E. T., & Pascarella, P. T. (1980). Toward the validation of Tinto's model of college student attrition: A review of recent studies. *Research in Higher Education*, 12(3), 271-282.
- Thompson, G. (1984). The cognitive style of field-dependence as an explanatory construct in distance education drop-out. *Distance Education*, 5(2), 286-294.
- Tinto, V. (1975). Dropout from Higher Education: A Theoretical Synthesis of Recent Research. *Review of Educational Research*, 45(1), 89-125.
- Tinto, V. (1982). Limits of theory and practice in student attrition. *The Journal of Higher Education*, 53(6), 687-700.

- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: The University of Chicago Press.
- Tyler-Smith, K. (2006). Early attrition among first time e-learners: A review of factors that contribute to drop-out, withdrawal and non-completion rates of adult learners undertaking e-learning programmes. *Journal of Online Learning and Teaching*, 2(2), 73-85.
- Van Gennep, A. (1960). *The rites of passage*. Translated by M. B. Vizedon and G. L. Caffee. Chicago: University of Chicago Press. Originally published as *Les rites de passage*. Paris: Nourry, 1909.
- Visser, L., Plomp, T., Amirault, R., & Kuiper, W. (2002). Motivating students at a distance: The case of an international audience. *Educational Technology Research & Development*, 50(2), 94-110.
- Voorhees, R. A. (1985). Student finances and campus-based financial aid: A structural model analysis of the persistence of high need freshmen. *Research in Higher Education*, 22(1), 65-92.
- Voorhees, R. A. (1987). Toward building models of community college persistence: A logit analysis. *Research in Higher Education*, 26(2), 115-129.
- Walker-Marshall, A., & Hudson, C. M. (1999). Student satisfaction and student success in the university system of Georgia. *39<sup>th</sup> Annual Forum of the Association for Institutional Research*, Seattle, Washington. Retrieved June 22, 2007, from [http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/15/dc/29.pdf](http://eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/15/dc/29.pdf).
- Wang-Chavez, J., Branon, R., & Mikolaj, P. (2001). Facilitating web-based interaction: Formative research on improving an online undergraduate business course. *Quarterly Review of Distance Education*, 2(3), 209-220.
- Willging, P. A., & Johnson, S. D. (2004). Factors that influence students' decision to dropout of online courses. *Journal of Asynchronous Learning Networks*, 8(4), 105-118.

- Workman, J. J., & Stenard, R. A. (1996). Student support services for distance learners. *DEOSNEWS*, 6(3). Retrieved May 4, 2007, from [http://www.ed.psu.edu/acsde/deos/deosnews/deosnews6\\_3.asp](http://www.ed.psu.edu/acsde/deos/deosnews/deosnews6_3.asp).
- Wojciechowski, A., & Palmer, L. B. (2005). Individual student characteristics: Can any be predictors of success in online classes?, *Online Journal of Distance Learning Administration* (Vol. 8). Retrieved April 17, 2006, from <http://www.westga.edu/%7Edistance/ojdl/summer82/wojciechowski82.htm>.
- Woodley, A., & Parlett, M. (1983). Student drop-out. *Teaching at a Distance*, 24, 2-23.
- Xenos, M., Pierrakeas, C., & Pintelas, P. (2002). A survey on student dropout rates and dropout causes concerning the students in the Course of Informatics of the Hellenic Open University. *Computers & Education*, 39, 361–377.
- Yorke, M. (1999). *Leaving early: Undergraduate non-completion in higher education*. London: Falmer Press.
- Zajkowski, M. E. (1997). Price and persistence in distance education. *Open Learning: The Journal of Open and Distance Learning*, 12(1), 12-23.



## **APPENDICES**

## Appendix A: The Web-Based Learning Questionnaire

eConcordia

Page 1 of 7

**Dates:** from 4/5/2008 to 4/5/2008

**Number of Submissions:** 0

### Web-based Learning Questionnaire

Section I: Information about You	
<p>1. I am currently enrolled in the following eConcordia course: (please select one):</p>	<p>ADMI 202 = 0%            AHSC 242 = 0%            ARTH 271 = 0%            CHEM 208 = 0%            COMM 299M = 0%            ENGL 270 = 0%            FINA 200 = 0%            FINA 210 = 0%            HIST 262 = 0%            INTE 290 = 0%            INTE 296 = 0%            MATH 204 = 0%            PHIL 235 = 0%            POLI 202 = 0%            POLI 204 = 0%            POLI 214 = 0%            POLI 216 = 0%            POLI 298F = 0%            POLI 298H = 0%            POLI 298Z = 0%            POLI 391 = 0%            RELI 216 = 0%            RELI 375 = 0%            SCPA 201 = 0%</p>
<p>2. Gender</p>	<p>Female = 0%            Male = 0%</p>
<p>3. First Language</p>	<p>English = 0%            French = 0%            Other = 0%</p>
<p>4. Age</p>	<p>under 18 = 0%            18-20 = 0%            21-24 = 0%            25-30 = 0%            31-40 = 0%            41 and over = 0%</p>
<p>5. Years of University-level schooling I have</p>	<p>0 = 0%            1 = 0%            2 = 0%</p>

completed.	3 = 0% 4 or more = 0%
6. Number of Online Courses I have completed for University credit.	0 = 0% 1 = 0% 2 = 0% 3 = 0% 4 or more = 0%
7. I am currently enrolled in ____ courses this semester:	1 = 0% 2 = 0% 3 = 0% 4 or more = 0%
8. Estimated number of hours I spent per week using a computer for educational purposes before I enrolled in this course.	0 = 0% 1 = 0% 2-5 = 0% 6-10 = 0% >10 = 0%
9. Estimated number of hours I spend per week online for non-educational purposes (for example, browsing the Internet, e-mail).	0 = 0% 1 = 0% 2-5 = 0% 6-10 = 0% >10 = 0%
10. I am currently employed and work ____ hours a week.	0 = 0% 1-9 = 0% 10-20 = 0% 21-34 = 0% over 35 = 0%
11. Once I have completed all of my studies, I expect my highest academic degree to be:	No degree = 0% Certificate = 0% Baccalaureate = 0% Grad Diploma = 0% Masters = 0% Doctorate = 0%
12. My father's educational background is:	Don't know = 0% Grade 8 or less = 0% High school diploma = 0% College = 0% University degree = 0% Grad school = 0%
13. My mother's educational background is:	Don't know = 0% Grade 8 or less = 0% High school diploma = 0% College = 0% University degree = 0% Grad school = 0%

14. Personally, graduating with a University degree is...	Not important = 0% Slightly important = 0% Fairly important = 0% Very important = 0% Vitally important = 0%
15. For the most part, the cost of my studies here at Concordia is paid for by (choose closest answer to your situation):	Myself without help = 0% Myself with financial assistance (government, scholarship, tuition waiver) = 0% Myself with help (parents/sponsor) = 0% Parents/Sponsor = 0% Work = 0% Other = 0%
<b>Section II: My Reasons for Choosing this Course</b> <i>Instructions: For each of the statements below, check in the circle that best describes your past experience and attitude towards online courses.</i>	
<b>Assessment Key</b> <b>0</b> = Have no opinion <b>1</b> = Strongly disagree <b>2</b> = Disagree <b>3</b> = Agree <b>4</b> = Strongly Agree	<b>With the following statement do you...</b>
16. I am confident in the career path I have chosen to pursue.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
17. I am confident in the choice of the programme I am enrolled in.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
18. It is important for me to graduate from Concordia (as opposed to completing a degree elsewhere).	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%

19. Attending University puts a large financial strain on me.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
20. I enrolled in this course because I expect it to be easier than classroom-based courses.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
21. I enrolled in this course because it was recommended to me.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
22. I enrolled in this course because it is a requirement for my programme of study (a core course).	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
23. I enrolled in this course because it is about a subject that interests me.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
24. I am confident in my decision of enrolling in this course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
25. I enrolled in this course because I knew I had the computer skills needed to succeed.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
26. I enrolled in this course because I have commitments at home that do not allow me much flexibility to study (i.e.: children, older relative, health problems, etc...)	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
27. I enrolled in this course because I wanted an easy elective.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%

28. I enrolled in this course because I like the idea of working at my own pace.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												
29. I enrolled in this course because of the flexibility it gives to my schedule.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												
30. I enrolled in this course because I want to minimize my traveling to and from school.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												
<p align="center"><b>Section III: My Expectations</b></p> <p><i>Instructions: For each of the statements below, check in the circle that best describes your current experience and expectations concerning your online learning experience.</i></p> <table border="0"> <thead> <tr> <th align="center">Assessment Key</th> <th align="center">With the following statement do you...</th> </tr> </thead> <tbody> <tr> <td align="center"><b>0</b></td> <td align="center">= Have no opinion</td> </tr> <tr> <td align="center"><b>1</b></td> <td align="center">= Strongly disagree</td> </tr> <tr> <td align="center"><b>2</b></td> <td align="center">= Disagree</td> </tr> <tr> <td align="center"><b>3</b></td> <td align="center">= Agree</td> </tr> <tr> <td align="center"><b>4</b></td> <td align="center">= Strongly Agree</td> </tr> </tbody> </table>		Assessment Key	With the following statement do you...	<b>0</b>	= Have no opinion	<b>1</b>	= Strongly disagree	<b>2</b>	= Disagree	<b>3</b>	= Agree	<b>4</b>	= Strongly Agree
Assessment Key	With the following statement do you...												
<b>0</b>	= Have no opinion												
<b>1</b>	= Strongly disagree												
<b>2</b>	= Disagree												
<b>3</b>	= Agree												
<b>4</b>	= Strongly Agree												
31. I expected to be actively communicating with my instructor or teaching assistant throughout the course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												
32. I expected to be actively communicating with my classmates during the course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												
33. I expected Online courses to be as structured as courses given in class.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%												

34. I expected to have fewer readings to do for this course compared to my other courses.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
35. Despite the fact that this course is online, I feel as if I am part of the class.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
36. I expected online learning to offer me a much more flexible study environment compared to in-class.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
37. I expected that this course would have more homework than similar classroom-based courses.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
38. I expected this course to be easier than others because it is given online.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
39. I expect that I will do very well in this course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
40. I am receiving timely feedback from the instructors and/or teaching assistants.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
41. I am making use of the discussion board to post and read messages.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
42. This course is taking less time than other classroom courses I am currently taking (or have taken in the past).	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%

43. I had to learn new computer skills in order to succeed in this course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
44. I am considering dropping the course by the DISC deadline (March 13).	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
45. I needed to make adjustments to my study habits in order to succeed in this course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
46. I expect that my actions in this course will have a direct impact on my chances to succeed.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
47. I did not expect to have trouble adapting to the self-pacing learning environment of online courses.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
48. I expected to have ample time to devote to this course throughout the semester.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
49. I am having no trouble devoting time to this course.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%
50. I expect to drop this course if I do not do well on my first assignment/exam.	0 - Have no opinion = 0% 1 - Strongly disagree = 0% 2 - Disagree = 0% 3 - Agree = 0% 4 - Strongly agree = 0%



## Appendix B: Weekly Survey

ECONCORDIA HOME | MY ECONCORDIA

1-888-361-4949

research@econcordia.com

### Questions for week 1 - Chemistry in Our Lives (CHEM 208)

QUESTIONS	YOUR ANSWERS	
1. So far, I am happy with my decision to enrol in this course.	<div>9</div> <div>NOT A HAPPY CAMPER</div>	<div>RESOLUTELY</div> <div></div>
2. I am confident in my ability to learn in courses given online	<div>ABSOLUTELY NOT</div>	<div>73</div> <div>NO PROBLEM</div> <div></div>
3. I expect this course to be easier than others because it is given online	<div>28</div> <div>STRONGLY DISAGREE</div>	<div>STRONGLY AGREE</div> <div></div>
4. I expect the following numerical grade at the end of the semester	<div>0</div>	<div>85</div> <div>100</div> <div></div>
5. I expect to feel isolated from my classmates in this course	<div>33</div> <div>I KNOW I AM NOT ALONE</div>	<div>WHERE IS EVERYONE</div> <div></div>
6. I am motivated to continue in this course	<div>I THINK I MAY DROP IT</div>	<div>93</div> <div>IM GOING TO CONTINUE</div> <div></div>
7. I watched (or plan to watch) the orientation video and/or attended the face-to-face orientation session	<div>NO</div>	<div>YES</div> <div>No</div> <div></div>
8. I am confident in my written communication skills (in English)	<div>37</div> <div>NO</div>	<div>YES</div> <div></div>

CLICK HERE TO LEAVE YOUR COMMENTS

RESET

SUBMIT

© 2007 eConcordia.com Inc. All Rights Reserved.

## ***Appendix C: Invitation to Participate***



### **eConcordia Research Invitation**

---



Hi!

If you have received this e-mail, it is because you are enrolled in one of the three popular eConcordia courses that have specifically been targeted for a study. In particular, we are interested in measuring your satisfaction and motivation levels with regards to your course on a weekly basis. When you use your eConcordia account for the first time, you will notice a spot in your portal where you will be invited to enrol in the survey. In agreeing to participate, you will be asked to answer eight simple questions about your experience with the course on a weekly basis. Each survey will not take more than 5 minutes of your time.

Other than the satisfaction of knowing that you are helping fellow and future online students at Concordia, we have put together a series of participation prizes that you become eligible to win with each submission of a survey. An updated list of the prizes, which currently include gift certificates, iPods, and Montreal Canadiens tickets, can be found on the website that has been devoted to the weekly surveys called "eConcordia Research".

Participation has absolutely no bearing on your final grade, and your identity will remain anonymous throughout the study, with the exception of the researcher. You can cease your participation in the study at any time simply by sending an e-mail to [research@econcordia.com](mailto:research@econcordia.com). All these instructions are available on the website. Please feel free to contact us should you have any questions or concerns.

It is with your information that we at eConcordia are better able to understand how to serve your needs. We sincerely hope that you will consider helping out by agreeing to participate.

*Best of luck this semester.*


Yours sincerely,

*Patrick Devey*



---


Patrick Devey  
Director, Design and Development, eConcordia  
[research@econcordia.com](mailto:research@econcordia.com)

## Appendix D: Research Website


ECONCORDIA HOME | MY ECONCORDIA

# eConcordia Research


 1-888-361-4949
  [research@econcordia.com](mailto:research@econcordia.com)



Welcome to the eConcordia Research Website and thank you for deciding to participate in this study. Your input is the most influential information that can be collected to improve the online courses, both in its design, as well as in its day-to-day operation. The surveys should not take you more than 5 minutes to complete, and a new one is released every week. The information found on this Website is also updated on a weekly basis. To start the surveys, please select the "Access Survey" button, followed by the relevant week. To get more information about the study, click on the link below, or for more instructions, watch the video.


[Home](#)
[Survey Invitation](#)
[How to Fill Surveys](#)
[Page List](#)
[About the Research](#)

[Access Survey](#)




**PATRICK DEVEY**  
DIRECTOR OF DESIGN AND DEVELOPMENT  
eConcordia

00:04 / 02:02




**Download.com**

In my opinion, [Download.com](http://Download.com) is the best online resource for obtaining software to do anything from managing your music files to web publishing to PC security. This really is the one-stop shop for freeware, shareware, and to try out virtually any software you want.



**Urban Dictionary**


Okay, this one may be a bit risky because of the bad words used in some of its definitions, but the [Urban Dictionary](http://UrbanDictionary.com) is an interesting bit of fun, especially when looking up the language "Quebecois" for an explanation of classic expressions like "virer une brosse" and "guidoune" (you've been warned).





**Mention-A-Webster**

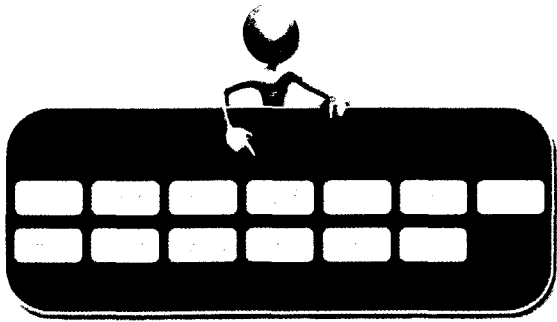
Have you "facebooked" a friend lately? Were you "facebooking" recently? Yes, that famous social utility can now be used as a noun, as well as a verb, according to the [Mention-A-Webster Online Dictionary](http://Mention-A-Webster.com). In fact, you can vote for it as one of 20 nominees for 2007 [Word of the Year](http://Mention-A-Webster.com)! (I voted for quixotic...but Blamestorm was a close second).

© 2009 eConcordia.com Inc. All Rights Reserved.


ECONCORDIA HOME | MY ECONCORDIA

# eConcordia Research

 1-888-361-4949
  [research@econcordia.com](mailto:research@econcordia.com)



© 2009 eConcordia.com Inc. All Rights Reserved.

## Appendix E: Exit Survey

Online Course Exit Survey																			
Section I: Background																			
Please enter your STUDENT ID NUMBER:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>																		
1. Number of Online Courses I have completed for University credit before I enrolled in this course.	<input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 or more																		
2. If I had to rate my communication skills in English (written), I would say that I would score:	Open (0-100) (0 low, 100 high)																		
3. If I had to rate my communication skills in English (oral), I would say that I would score:	Open (0-100) (0 low, 100 high)																		
4. The orientation session was useful for me.	<input type="radio"/> What orientation session? <input type="radio"/> Did not watch/attend. <input type="radio"/> Not at all. <input type="radio"/> Somewhat. <input type="radio"/> Yes, it helped me.																		
5. I am currently employed and work ____ hours a week.	Open (0-99) (put 0 if you do not work regularly in a typical week during a school semester)																		
Section II: My Reasons for Choosing this Course																			
<i>Instructions: For each of the statements below, check in the circle that best describes your past experience and attitude towards online courses.</i>																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Assessment Key</th> <th style="width: 10%;">=</th> <th style="width: 70%;">With the following statement do you...</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">=</td> <td>Have no opinion</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">=</td> <td>Strongly disagree</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">=</td> <td>Disagree</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">=</td> <td>Agree</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">=</td> <td>Strongly Agree</td> </tr> </tbody> </table>	Assessment Key	=	With the following statement do you...	0	=	Have no opinion	1	=	Strongly disagree	2	=	Disagree	3	=	Agree	4	=	Strongly Agree	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree
Assessment Key	=	With the following statement do you...																	
0	=	Have no opinion																	
1	=	Strongly disagree																	
2	=	Disagree																	
3	=	Agree																	
4	=	Strongly Agree																	
6. I enrolled in this course because I wanted to minimize my traveling to and from school.																			

	<input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
7. I enrolled in this course because I expected it to be easier than classroom-based courses.	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
8. I enrolled in this course because it was about a subject that interests me.	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
9. I enrolled in this course because I had commitments at home that did not allow me much flexibility to pursue my studies (i.e., children, older relative, etc...).	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
10. I enrolled in this course because I had commitments at work that did not allow me much flexibility to pursue my studies.	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
11. I enrolled in this course because I wanted an easy elective.	<input type="radio"/> 0 - Have no opinion <input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree

		<input type="radio"/> 4 - Strongly agree
<b>Section III: My Reasons for Withdrawing</b>		
<i>Instructions: For each of the statements below, check in the circle that best describes your current experience and expectations concerning your online learning experience.</i>		
Assessment Key		With the following statement do you...
1	=	Strongly disagree
2	=	Disagree
3	=	Agree
4	=	Strongly Agree

12. I withdrew from the course because I underestimated the amount of time it would require.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
13. I withdrew from the course because I felt isolated from my classmates (did not feel part of the class).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
14. I withdrew from the course because the content was more difficult than I expected.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
15. I withdrew from the course because I had trouble managing my time.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
16. I withdrew from the course because I felt helpless to improve my situation.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree

17. I withdrew from the course because I had work commitments that impeded my ability to complete it.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
18. I withdrew from the course because I needed to concentrate on other (more important) courses.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
19. I withdrew from the course because there was more work than I expected.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
20. I withdrew from the course because I did not receive timely feedback from the instructional team (instructor, teaching assistants).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
21. I withdrew from the course due to technical difficulties I was having (no access to a computer, poor Internet connection).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
22. I withdrew from the course because I felt I lacked the prerequisite knowledge needed to understand the material.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
23. I withdrew from the course because I found it too difficult to learn online.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree

	<input type="radio"/> 4 - Strongly agree
24. I withdrew from the course because I was not clear on what was required from me to succeed.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
25. I withdrew from the course because I had unexpected commitments that I had to deal with (work/family).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
26. I withdrew from the course because I did not think it would help me advance towards my personal goals (career, academics).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
27. I withdrew from the course because I fell behind and felt that I could not catch up.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
28. I withdrew from the course because I did not have the computer skills needed.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
29. I withdrew from the course because I had trouble getting started (account problems, registration problems).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
30. I withdrew from the course because I did not perform well on an assignment/quiz/exam.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree



	<input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
31. I withdrew from the course because I had family commitments that impeded my ability to complete it.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
32. I withdrew from the course because I was afraid that I was going to do poorly (and lower my GPA).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
33. I withdrew from the course because I waited too long to get started with the course materials.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
34. I withdrew from the course because I had personal issues (non-work related) that distracted me from my studies.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
35. I withdrew from the course because I did not know who to contact to get help.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
36. I withdrew from the course because I did not find the course materials interesting.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree

37. I withdrew from the course because I did not receive enough feedback from the instructional team (instructor, teaching assistants).	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
38. I withdrew from the course because I had difficulties understanding the content.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
39. I would enrol in another online course in the future.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
40. I would recommend this course to others.	<input type="radio"/> 1 - Strongly disagree <input type="radio"/> 2 - Disagree <input type="radio"/> 3 - Agree <input type="radio"/> 4 - Strongly agree
<b>Section IV: Overall</b>	
41. Overall, I was satisfied with the course.	0-100
42. Had I continued in this course, the numerical grade I estimate I would have been awarded would be:	0-100
43. In your opinion, what could eConcordia have done (or done better) in order for you to have continued in the course?	Open
44. What factor (or factors) led to your decision to withdraw from the course?	Open
45. What would you do differently if you had to retake the course?	Open
46. Other comments	Open
<input type="checkbox"/> I have read and understood the <u>recruitment letter</u> and by submitting this survey, I agree to participate in this study.	
(yes/no) <input type="checkbox"/> I volunteer to participate in a follow-up interview (face-to-face or by phone) to elaborate on the reasons why I decided to discontinue the online course.	

## GLOSSARY

**Asynchronous learning:** Instruction that is not carried out in real-time.

**Bachelor's Degree:** The first degree obtained at a university. In Québec, the normal length of the program as a full-time student is three years. A Diploma of Collegial Studies (DEC) is the basic entrance requirement to a bachelor's degree program.

**Blended learning:** Instruction that combines face-to-face (classroom-based) and electronic delivery of content.

**CÉGEP (Collège d'enseignement général et professionnel):** A post-secondary institution in Québec offering college-level programs that either prepare students for entry into university (two-year pre-university programs) or train students for a wide range of occupations (three-year career and technology programs). A Diploma of Secondary Studies is the basic minimum requirement for entry into CÉGEP.

**Certificate:** An undergraduate Certificate is a coherent program, usually of 30 credits, made up of regular undergraduate courses. Courses taken as part of a Certificate program are normally applicable to the appropriate undergraduate degree. There is no guarantee that a Certificate program can be completed in one academic year.

**Correspondence courses:** One of the earliest forms of distance education that involves paper-based materials that were mailed to students with little or no interaction between the stakeholders.

**Credits:** One credit represents a minimum of 45 hours spread across various activities (lectures, tutorials, laboratories, studio or work practicums, examinations, and individual work). Courses are generally three credits (one semester) or six credits (two semesters).

**DEC (Diplôme d'études collégiales):** The diploma earned by CÉGEP students upon completion of either the two-year or three-year program.

**Department:** A section within a university faculty dealing with a particular field of knowledge, e.g., Department of English.

**Diploma mills:** A usually unregulated institution of higher education granting degrees with few or no academic requirements.

**DISC:** The institutional deadline for academic withdrawal without tuition refund. This usually occurs 8 weeks into the semester.

**DNE:** The institutional deadline for academic withdrawal from courses by students without financial penalty. This usually occurs 2 weeks into the semester.

**Extended Credit Program (ECP):** Graduates of secondary schools outside the province of Québec may be considered for admission to the Extended Credit Program at Concordia. The ECP requires completion of 30 credits in addition to the regular degree program. The duration of a degree program is normally four years.

**Faculty:** A branch of a university encompassing various related disciplines, e.g., Faculty of Arts & Science.

**Full-time student:** If you are studying full-time, you will normally take 30 credits a year. A full-time student will typically enrol in at least four (4) courses during the fall and winter semesters. The maximum course load for a given semester is five (5) courses.

**Independent Student:** Independent students register for individual courses, normally on a part-time basis. Typical Independent students may be interested in taking courses for general knowledge or job-related purposes. Others may be interested in specific subject areas or may take courses to “test the waters” prior to embarking on a part-time or full-time basis as an undergraduate student at the University.

**Major:** A Major is a sequence of courses totalling 36 or more credits, except in the John Molson School of Business where the Major consists of at least 24 credits in a particular discipline in addition to the required 42-credit core. The Major may include certain courses in other closely related fields.

**Master's Degree:** The second degree obtained at a university after completion of a specialized program in a particular discipline. Requires a bachelor's degree for entry to the program. The degree normally requires two years of full-time study and research.

**Mature Entry Program (MEP):** Concordia has a long tradition of service to adult and part-time clienteles and this service remains a vital part of its mission. Canadians and Permanent Residents who are 21 years of age or older and who lack the normal pre-university schooling may still be considered for admission to the Mature Entry Program (MEP), which requires successful completion of a minimum of 18 additional credits. Mature entrants must meet certain admission conditions.

**Minor:** A Minor is a sequence of courses totalling 24 or more credits which provides a basic introduction to the methodology and key concepts of a discipline or field. Except in the John Molson School of Business where the Minor consists of at least 12 credits in the chosen discipline in addition to the required 42-credit core. Completion of one or more Minors does not meet requirements for a degrees and a Minor must be taken in combination with a Major, Specialization or Honours. There is, however, no requirement to take a Minor.

**Part-time student:** If you study part-time, you may take up to 18 credits in the regular session (September–April), spread equally over the two terms. A part-time student can enrol in no more than four (4) courses in a given term.

**Program Length:** Because students in the province of Québec must complete a minimum of 13 years of study prior to entering university, the duration of a regular degree program is normally three years (90 credits). For students from outside Québec, please see **Extended Credit Program**. The Bachelor of/Baccalaureate in Engineering, Bachelor of/Baccalaureate in Arts (Early Childhood and Elementary Education), Bachelor of/Baccalaureate in Education (TESL), and Bachelor of/Baccalaureate in Fine Arts (Specialization in Art Education) degree programs are four years in length.

**Traditional student:** A student who has not interrupted their studies prior to entering University.

**Synchronous learning:** Instruction that is carried out in real-time. Synchronous courses that are given online would typically make use of chat rooms and audio/video conferencing technology.

**Undergraduate Student:** Students registered in a bachelor's degree or certificate program, whether on a full-time or a part-time basis.

*Note: Many of these definitions were taken directly from the Concordia University website:  
<http://www.concordia.ca/info/futurestudents/undergraduate/programs/glossary/>*